

# COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, Editors.

Volume 20

NEW YORK, THURSDAY, SEPTEMBER 22, 1921

Number 12

## *Utilizing Even the Squeal*

**G**REATER efficiency in use is the impelling force behind the studies in the use of powdered coal. The coal-producing industry itself is one of the largest users of coal and it is but natural, therefore, that here, where there is the fullest appreciation of its value, the art of getting the most power out of coal should be given first attention. As a natural consequence of having always used the unmarketable portion of the mine output for the power plant, the mine operator has sought improved equipment and methods of converting this lowest-grade fuel into energy at the least cost. The mine management has ordered the cars of dirty product marked for the mine power house and the mechanical engineer has of necessity sought better ways of utilizing it.

In the anthracite region the problem has become one of using extremely fine coal, as distinguished from the utilization of the unmarketable high-ash product at the soft-coal mines. So long as the power industry can get steam coal suitable for standard equipment the chief incentive for developing the art of burning refuse must come from those who would turn an expense into an income. The hard-coal producers, though having an output but 15 per cent of the total for the country, require for their operations a quantity of coal for fuel as great as the whole bituminous industry and they furthermore have as a commercially unmarketable product at least 10 per cent of their output. The "slush"—that is, the anthracite passing through screens with openings one-thirty second of an inch in diameter—is fuel, the cost of producing which is no less than that of stove coal, but which is as yet largely consigned to refuse piles, saved only because of possible future use.

Quite appropriately, therefore, one of the sessions of the American Institute of Mining and Metallurgical Engineers at Wilkes-Barre last week was devoted to the subject of the application of powdered fuel in boilers. The paper on this subject by J. M. Fuller, of the Fuller Engineering Works, and the discussion that followed brought out the progress that has been made in saving the least valuable of the byproducts of the anthracite industry—the "squeal" of the pig, as it were.

It was asserted that pulverized anthracite can be burned under boilers with an efficiency apparently greater than in the combustion of larger sizes in other types of furnaces, that no inherent difficulties have developed in the process of burning, and that the problem as yet not completely solved is the pulverizing of the coal preparatory to burning. In other words, the hardness of anthracite (and lack of volatile matter) has not acted as a bar to combustion in this process but has advanced the problem of fine grinding. Comminution to 100 mesh and finer is a

prerequisite to burning as a powder, and the reported cost of 20 kw.-hr. per ton of product ground for the softer varieties of anthracite, together with the fixed charges on the grinding equipment, do not encourage the belief that powdered anthracite will at once replace the larger sizes, or bituminous coal, in steam plants generally outside the anthracite region.

It is not necessary, however, to go outside the hard-coal region to find market for all the power that can be developed from the combustion of "slush" and fine anthracite. The power requirements of this region are now some 3,000,000,000 kw.-hr. and studies made by the superpower survey have shown that this power can be developed from the byproduct steam sizes without greatly affecting the supply of fine coal required by outside markets, providing the smaller isolated steam plants in the region are replaced by large economic units. So definite is the trend in the direction of large central power plants and so promising is the utilization of fine sizes of anthracite, both as pulverized fuel and on stokers, that no one can hold that the engineers and managers of this industry are not fully alive to their possibilities.

Progress is slow—culm banks piled up in the first fifty years of the industry have not all been converted into fuel in the second half century. Slush is accumulated now faster than it is used. It is encouraging that the direction of greatest effort is now toward making each portion of the product of the anthracite mines pay its share of the cost, to the end that the cost of the principal product—domestic fuel—may be cheapened for the household consumer.

## *The Seriousness of Unemployment Among Bituminous Miners*

**U**NEMPLOYMENT among coal miners will constitute one of the major subjects of discussion at the forthcoming conference which will meet in Washington in response to a call by Herbert Hoover, Secretary of Commerce. Unemployment at coal mines during the first eight months of 1921 set a new low record. It was even greater than during the period following the panic of 1893, which previously held the low record. Twenty-six per cent less work was performed in coal mines during the first eight months of 1921 than during the corresponding period of 1920. Enough information already has been gathered, in anticipation of the conference, to indicate that approximately 150,000 men who are coal miners by trade are not now engaged in that activity.

No figures are at present available to indicate how many of these men have been absorbed by other employment. In some of the coal-mining districts there is other work to which miners may turn, but in most of the districts this is not the case. A great many

miners have been and are now idle—living on their savings or on their credit and awaiting an improvement in the demand for coal.

We are informed that figures to the end of August show 68,000,000 man-days of work performed in 1921 as compared with 91,500,000 man-days during the same period of 1920. The record for 1921 is but slightly in excess of that for 1919, when lack of work sowed the seed for the great industrial disturbance which followed the refusal of the demands of the United Mine Workers. During the peak of war activities 615,000 men were employed in mining bituminous coal, increasing in 1920 to about 640,000. At the present time it is believed that as few as 500,000 men are employed in bituminous coal mines.

Due to the seasonal character of the demand and the practice of carrying little coal in storage, unemployment in the coal industry constitutes a special problem. Plans for the unemployment conference have gone far enough to indicate that the coal-mining industry is to receive special attention. One of the interesting developments of the preliminary study being made of the situation in the bituminous branch is the tendency of working mines to approximate capacity production. Unlike manufacturing plants, the returns indicate that mines, for the most part, run full tilt or close down entirely. The situation in the anthracite district is much different. Production is practically as large as ever with the figures indicating increased employment this year, even as compared with the boom year of 1920.

### *A Story About Snowbirds*

**E**ARLY last spring, when felt hats were becoming *de trop*, two disciples of Jeff Peters began the rounds of the office buildings in a thriving Ohio city, showing a fine line of genuine Panama hats. These hats were in the rough, just as they are shipped from the tropics of Central America and were offered to the victims of this particular episode, two enterprising young business men, partners in the real estate game, for \$25 each. The idea of getting something real fine, direct from the source of supply, as it were, and without paying a retailer's profit, appealed to these gentlemen, and after much bickering the hats were knocked down to both for the price of one and the sale consummated.

The next scene reveals the proud purchasers of hats in the store of the leading hatter in their city. In a confidential tone of voice he is asked to step into the back of the store and is asked if he can be trusted to block real Panama hats without making a substitution or injuring the fiber. On being assured of his integrity, the real estate men bring forth their purchases, carefully wrapped in tissue paper. The hat specialist looks the goods over and asks whether these hats were purchased for genuine Panamas, for he wishes them to know that they are in fact made of paper, a clever Japanese imitation, now quite common and cheap. To demonstrate, he picked out a small section of the "straw" from the inside of one hat and unrolled it to a strip an inch wide. The story of the purchase was then told.

It later developed that the two peddlers did a thriving business in these hats and that many otherwise intelligent business men were taken in, for it was one

of the principles of the salesman never to leave an office without making a sale. All efforts of the legitimate dealers in that city to catch the shysters and run them out were unavailing, even with the help of the police. Perhaps they were "snowbird" coal dealers temporarily out of work, it having been early in the warm season when they were following the game we have described.

As autumn approaches we are hearing much about snowbird coal dealers, particularly in the Middle West. One is said to be causing much concern to the trade because of the successful use he is making of the mail-order plan of getting business. Some of his literature has come to our desk, and we digress for the moment from our theme to note that his copy is good and his follow-up system according to the best practice. We cannot fail to wonder why, if such methods produce business for the quack, they should not be worth imitating by the regular dealer. That is, we wonder until we cogitate on the story of the hats and the gullibility of people who think they can beat the middleman out of a profit. It is a trite saying that human nature is the same everywhere. The irresponsible element is to be found in every line of human endeavor—coal has no monopoly on the snowbird.

What is to be done with the intruder, whether he be in the guise of a retail coal dealer, a jobber or a producer? Every winter shippers of coal are regularly warned not to send coal to this and that name, because he is not a regular dealer and will hurt the trade. Last year producers were advised that they could help hold the price of coal within reason by refusing to let the mushroom jobbers have coal for speculation, and the railroads were importuned to refuse cars to the wagon mines, who were in the game only while prices were extremely profitable. There is no anaesthetic for this type of coal man, who at most is but an irritant to the "legitimate" trade. We quote the word because its meaning, though sanctioned by law and custom, does not always bar from its scope the snowbird, who is really to be defined as the irresponsible, whether producer, jobber or retailer.

It would seem to be the saner philosophy to appreciate that the snowbird of today may be the responsible coal man of tomorrow and to seek to beat his game by better merchandising. Satisfied customers will not turn their trade to unknown channels.

Dissatisfaction on the subject of coal engendered by the conditions of recent years can but cause many to seek novel ways of getting supplies apart from the dealer they have known too intimately for so long. Fraudulent schemes of short-circuiting the dealer should be given the publicity and treatment they deserve, but those that are merely outside the normal course of trade, whether fly-by-night peddlers or factory salesmen, are better treated as evidences of shortcomings in the trade itself—seasonal and in part temporary and altogether susceptible of reduction to a negligible minimum by proper selling on the part of the permanent trade. Some folks always will take a chance on buying from a street hawker, but most of us prefer the established store, where we feel we have some assurance of quality and value received for our money. Where snowbird coal retailers flourish, look for weakness in the merchandising and publicity methods of the established trade. Where the retailer has the confidence of his public, snowbirds will find scant fodder.



# How to Recover Four Million Tons of Usable Coal from The Slush Made at Anthracite Breakers\*

Ten Million Tons of Fine Culm Is Run Into the Streams, Into the Mines or Is Stored—Methods of Recovery, Past and Present—Eight Tables Expected to Deliver Two Hundred Tons of Clean Coal Per Day

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THE modern anthracite breaker or washery uses almost exclusively a wet method of preparation, which requires, roughly, one gallon of water per minute for every ton of coal produced per day. The entire anthracite industry uses about 320,000 gallons of water per minute for this purpose, or 800,000 tons of water per day. As this water leaves the breakers it contains fine solids—coal, slate, pyrite and clay—and is then called silt or slush; as slush is the term most commonly used, it will be employed throughout this paper. The solid content of the slush will be referred to as solids.

In the earlier days of anthracite mining little coal was washed, less crushing was employed and virgin coal was mined exclusively. These conditions caused the quantity of solids to be relatively small and made such as there were comparatively coarse. For this reason the slush problem was not acute. Such slush as was produced usually could be easily impounded and retained or could be discharged into the streams without any pollution being apparent.

The character of the fine waste from the breakers changed materially as its quantity increased until now about 40,000 tons of slush solids are produced daily. Second mining and robbing operations materially increased the quantity of fine solids delivered to the breaker in the mine car. The demand for chestnut, stove and egg sizes, to the exclusion of grate, steam-boat and lump sizes, requires finer crushing of the mine-run coal with a consequent increase of fine solids in the slush. The use of rice and barley sizes removed a considerable tonnage of coarser solids but left great quantities of fine solids, difficult to retain completely and store and long considered of no possible fuel value.

## SLUSH SOLIDS CAUSE POLLUTION OF STREAMS

Despite the efforts of the coal operators, the slush solids have found their way into the streams, causing in some cases serious pollution. The Water Supply Commission of Pennsylvania published in 1916 a report on Culm in the Streams of the Anthracite Region,<sup>1</sup> from which the following is taken:

About 40,000,000,000 gallons of water carrying 10,000,000 tons of fine culm are discharged into the water-courses direct, flushed into the mines, or disposed of by various means on the surface. The extent to which the very small sizes of anthracite have been deposited in the rivers draining the coal fields is made evident by the fact that over a quarter of a million tons are recovered annually from the river beds by coal-washing operations.

The contamination of the streams has been in progress for more than fifty years and it is estimated that there are now 660 miles of creeks and small streams which should be available for water supply but which are rendered useless for domestic and manufacturing purposes by the culm and sulphur water from the mines.

Since 1914 the quantity of solids reaching the streams

probably has not increased, but the character of the material that does reach them has changed. Due to the war demand for steam coal, less of these sizes was lost from the breakers and many of the banks that could be washed into the streams by heavy rainfall and freshets were prepared for use and shipped. As a result, it is probable that far less coal of the buckwheat sizes is now finding its way into the streams.

The recovery of coal from the rivers increased enormously during the war period, but the coal was largely obtained from deposits formed by the waste of earlier years. W. C. Webbert,<sup>2</sup> in an address before the Engineers' Club of Philadelphia, said: "The total output of coal for the Lehigh River for 1919 was 120,000 tons; adding to this 235,000 tons for the Schuylkill and 1,580,000 tons for the Susquehanna and its tributaries, the total output of river coal in eastern Pennsylvania for the year 1919 can be estimated at 1,935,000 tons. Approximately the same amount of coal was reclaimed in 1918, but prior to that year the output was much less."

Slush, as now discharged from the breakers, contains practically no solids larger than  $\frac{3}{8}$  in. diameter and often passes through a round mesh of  $\frac{1}{8}$  or  $\frac{3}{16}$  in. diameter. It carries from 4 to 15 per cent. of solids by weight, and in isolated cases an even higher percentage. The solids will range in size down to particles that are colloidal and, under certain conditions, settle very slowly.

Analyses of the various sizes of solids in slush generally show that the ash content—that is, impurities—increase with decrease in size. Table I is a typical screen analysis which illustrates this condition.

TABLE I. SIZES OF MATERIAL IN SLUSH WITH THEIR ASH PERCENTAGES

	Per Cent Each Size	Cumulative	Per Cent Each Size	Cumulative
On 3/32-in. round screen.....	5.3	5.3	27.38	27.38
Through 3/32-in. round screen on 20-mesh.....	21.7	27.0	30.26	29.70
Through 20-mesh on 35-mesh.....	15.0	42.0	34.40	31.40
Through 35-mesh on 48-mesh.....	6.4	38.4	34.80	31.80
Through 48-mesh on 65-mesh.....	4.7	33.1	34.10	32.00
Through 65-mesh on 100-mesh.....	5.1	58.2	36.10	32.40
Through 100-mesh on 200-mesh.....	6.8	65.0	38.84	33.10
Through 200-mesh.....	35.0	100.0	59.40	42.30
	100.0			

The granular solids that will remain on a 200-mesh screen are reasonably low in ash and consist of grains of fairly pure coal mixed with grains of slate, sand, pyrite and, occasionally, calcite and gypsum. The slimes, which will pass a 200-mesh screen, consist largely of fine slate and fine clay and show a high ash content.

The quantity of solids in slush and their character varies greatly from breaker to breaker. A fairly extensive investigation permits the following generalizations: (1) Steep-pitch mining produces a greater quantity of slush solids and generally causes a large quan-

\*First part of article read before the American Institute of Mining and Metallurgical Engineers at Wilkes-Barre, Pa., Sept. 12.

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<sup>1</sup>Water Resources Inventory Report, part X.

<sup>2</sup>Bureau of Topographic and Geological Survey, State of Pennsylvania.

tity of slimes as well as considerable impurities in the plus 200-mesh solids. (2) Second-mining and robbing operations, where crushing has taken place, have the same effect as steep-pitch mining and generally produce a colloidal slime, which settles with difficulty. (3) A coal of soft and friable nature increases the amount of solids, but these are relatively low in ash, this being true not only of the larger slush but even of the slimes.

An accurate determination of the tonnage of slush solids made annually is quite difficult but a close approximation can be obtained by making careful tests at breakers representing the various fields throughout the region and by applying these figures to the total production of the fields.

In figuring the tonnage of recoverable coal, no solids passing through a 200-mesh screen are included and the amount of refuse larger than 200-mesh that must be removed to reduce the ash content to 15 per cent has been deducted. A summary of the determinations of the three anthracite fields is given in Table II.

TABLE II. SOLIDS AND RECOVERABLE COAL IN SLUSH OF ANTHRACITE FIELD PER CENT SHIPMENT

	Wyoming Field, Per Cent	Lehigh Field, Per Cent	Schuylkill Field, Per Cent
Total solids.....	7.2	22.4	22.3
Recoverable coal with 15 per cent ash.....	3.5	9.5	8.8

The Anthracite Bureau of Information states that the shipments for the past three years are as in Table III. The shipments during 1918 were at an unusually high rate, but those of 1919 and 1920 are more nearly representative.

TABLE III. ANTHRACITE SHIPMENTS FOR THREE YEARS

Year	Wyoming Field, Long Tons	Lehigh Field, Long Tons	Schuylkill Field, Long Tons	Total, Long Tons
1918.....	42,382,793	11,511,760	22,755,365	76,649,918
1919.....	36,689,313	10,266,479	19,899,519	66,855,311
1920.....	37,249,303	9,860,611	21,517,211	68,627,125
Average, 1919-1920.....	36,969,308	10,063,545	20,708,365	67,741,218

Applying the field averages for total solids and recoverable coal to the average shipments gives the following annual tonnages in the slush:

TABLE IV. SOLIDS AND RECOVERABLE COAL IN SLUSH OF ANTHRACITE FIELDS

	Wyoming Field, Long Tons	Lehigh Field, Long Tons	Schuylkill Field, Long Tons	Total, Long Tons
Total solids.....	2,661,000	2,254,000	4,618,000	9,533,000
Recoverable coal with 15 per cent ash.....	1,294,000	956,000	1,822,000	4,072,000

This indicates that 4,000,000 tons of coal can be recovered from the slush at present produced, leaving 5,500,000 tons of solids, a large part of which is finer than 200-mesh, which must be retained in some efficient way if serious pollution is to be prevented. It must be noted that the trend in mining anthracite indicates that the tonnage of solids in slush and recoverable therefrom will increase rather than decrease, for more and more robbing is being resorted to and much of the reserves from which future production must come lie in the Schuylkill field.

It is probable that the first efforts to retain the solids in slush consisted in allowing the solids to settle back of retaining dams, and were planned for the purpose of preventing stream pollution. As the size of the dams increased, it became necessary to find other places for storage or a method that would hold a greater tonnage on a given ground area. Slush is now disposed of in the following ways: Run to slush dams; used for hydraulic mine filling; delivered to settling tanks of various types where the solids are removed and stocked, burned in mine-boiler plants, or shipped.

Much of the slush produced is still delivered to settling dams, which effect a more or less complete removal of solids. These dams are constructed in two ways: Either the slush is impounded to form a pond and the clarified water is allowed to overflow the top or the retaining dam is constructed of porous material and the water is filtered in its passage through the dam. Either type, if given proper care, can be made very efficient and an almost complete removal of solids obtained, so that the clarified water contains less than 0.1 per cent solids.

Where the slush is impounded and clarified by sedimentation, a large dam must be constructed so as to give plenty of settling area, and a depth of several feet of water should be maintained. This requires the labor of several men and often large quantities of lumber. Unless the men are carefully watched, the dam will not be properly maintained and only the coarsest solids will be retained. When the water is several feet deep it is difficult to keep the slush and water from breaking through unless the dam is heavily reinforced with breaker slate, mine rock, ash or lumber. At many collieries, slush dams must be located on territory that is broken and caved from mining operations, and much of the water, and often slush solids, finds its way into the workings and seriously increases the pumping load.

#### BOILER ASHES USED AS FILTERING MEDIUM

Slush dams that clarify by filtering usually are constructed of a core of mine rock and breaker slate. Boiler ashes are dumped along the inside of this wall and act as a filtering medium. It often is difficult to seal all the large passageways so that slush solids will not pass. After these passages are sealed, however, the dam will deliver fairly clean water. The ashes finally become clogged with slush solids, so that the filtering operation stops; the dam walls must then be raised to offer new ashes for the filtering process.

Where the slush can be run to the basin by gravity, dams afford a fairly low-cost method of retaining slush solids, but while the slush is kept from polluting the rivers and streams, it is not available for burning. The retained solids invariably are so permeated with slimes and fireclay that they cannot be utilized for fuel without further preparation.

Slush was used as early as 1884 to extinguish a serious mine fire. It was early realized that such flushing, in addition to serving other purposes, gave a possible means of disposing of slush and preventing stream pollution. It is seldom, however, that mine flushing of slush can be applied solely for the prevention of pollution, as the cost generally is high. If, however, fires are to be extinguished, surface is to be supported or filling required to enable further extraction of pillar coal, mine flushing of slush may be economic. Tests made by Prof. F. B. McKibben and W. H. Conklin, at the Fritz Engineering Laboratory of Lehigh University show that slush solids, when confined so as to prevent lateral expansion, will support heavy pressures per square foot. The use of slush for hydraulic mine filling creates many problems where the coal measures are steeply pitching, owing to the difficulty of holding the solids in place while the water is drained away.

CharlesENZIAN<sup>3</sup> gives the cost of hydraulic mine filling with slush as from 9c. to 33c. per cubic yard when operating at a rate of at least 400 cu.yd. daily.

<sup>3</sup>U. S. Bureau of Mines, *Bulletin* 60.



These costs are based on prices in force during 1911 and 1912 and should be corrected for present-day conditions. They do not include anything for the value of the coal in the slush. When there is a method of utilizing this material that will return a greater revenue than the mine coal won by flushing with slush, this method of disposal will cease in all but exceptional cases.

Settling tanks of various types were developed to recover as much of the solids as possible in a relatively dry condition, so that a large tonnage could be stocked on limited areas. Such tanks also enabled the recovery of a crude product for shipment, for which there has been a small demand for certain special uses—mainly in the metallurgical industries.

The earliest settling tanks installed worked intermittently and consist of a series of hoppers or tanks with gates at the bottom. The slush is delivered into one tank until it is filled with solids and is then diverted into a second, while the solids in the first are discharged from the bottom into cars or a conveyor line by which they are delivered to the bank. These tanks remove plus 100-mesh solids rather completely, if made large enough and given proper attention. The solids recovered contain layers of fireclay and slime, which render them unfit for boiler fuel. One man's time is required to regulate the flow of slush and to discharge each tank when filled. No power is taken for tank operation, but installations can be made only where the necessary headroom is available. The cost of repairs on these tanks is low, as no machinery is employed, but, due to the attention required, they have given way to tanks where the operation is continuous.

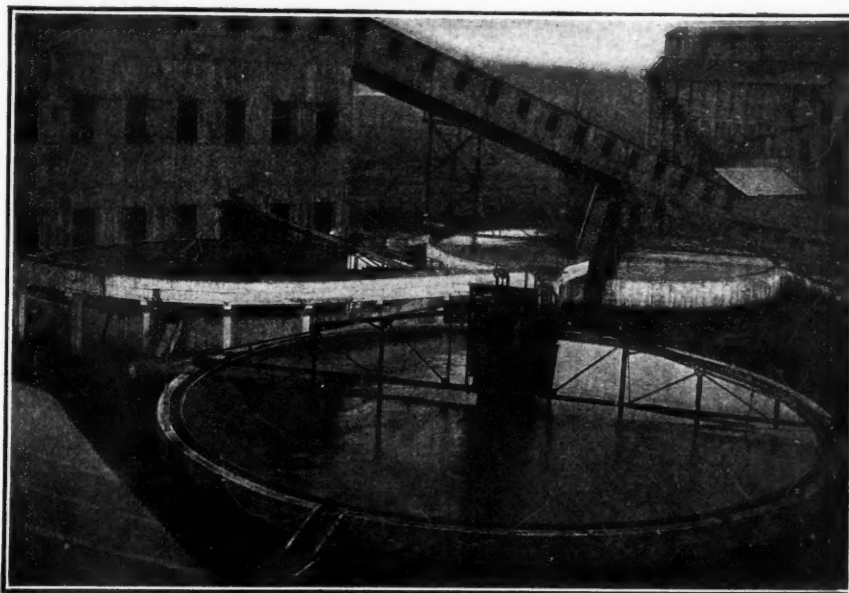
Various arrangements of bucket line, feed and overflow are used. In some cases buckets with perforated sides are employed while in others a solid bucket is used; but the bucket is slightly tilted after leaving the water, in order to decant off the excess water. Unless the bucket line is quite large and is operated at a low speed, only the coarsest solids will be removed. Many of these tanks lose some solids larger than  $\frac{1}{4}$ -in. mesh, while at the same time some solids as fine as 100-mesh are removed. Due to the agitation of the bucket line, little slime and fireclay are found with the recovered solids, which can be used as fuel in properly designed boiler plants. The attention required is confined mostly to lubrication and repairs, but the construction costs are fairly high and repairs to the elevator are difficult and expensive. As the buckets and chain are submerged in the slush for much of the time, wear is heavy. At one colliery, where acid water is used, buckets last about six months and the chain a year.

In the drag-flight type a conveyor is installed in a shallow horizontal tank of some length. At the discharge end the conveyor is carried out of the tank on a pitch that allows some drainage of the removed solids and returns over the top of the tank. The conveyor flight is operated at a speed not greater than 50 ft. per minute; the sectional area of the tank should be such

that the speed of the slush through the tank will be the same as the speed of the flight, so that the agitation caused by the flight will be reduced to a minimum. The slush is fed near the tail wheel of the conveyor and the overflow is taken off toward the discharge end.

Some of these tanks make a good recovery of solids. One tank, with the horizontal part of the conveyor 60 ft. in length, using 6 x 18-in. flights, spaced 18 in. apart and running 50 ft. per minute in a tank 2 ft. 8 in. inside width, handled 800 gallons of slush per minute through  $\frac{1}{8}$ -in. round mesh, carrying about 13.5 per cent by weight of solids and reduced the solids in the overflow to 1.2 per cent, or a 91 per cent recovery of solids.

No data are available as to the size of the solids in overflow and recovered product, but it is probable that practically all solids larger than 200-mesh were recovered. This is the best performance record obtainable, and tests were made shortly after the settling tank was first operated. Experience shows that the efficiency decreases after these tanks have been in service some time. The efficiency of this tank falls off if the slush feed is subject to heavy rushes, such as occur



DORR THICKENERS AT A BITUMINOUS WASHERY

Such machines rid the water of solids to an extent sufficient to permit its reuse for any and all coal-washing purposes. The discharge from the tank is approximately 50 per cent water and 50 per cent coal.

when a number of jigs in the breaker are slushed simultaneously.

The coal recovered usually contains all the plus 100-mesh solids in the slush, but it also contains sufficient finer solids to make its utilization uneconomic without further preparation. It is usual to assign one man to the operation of these tanks, but he generally has time for additional duties.

The construction costs are moderate; one tank designed to handle 2,000 gallons of slush per minute cost \$9,000, including the cost of the pipe line erected to take the water to the tank and the product to the stocking conveyor. An installation erected during 1920-21, consisting of 8 x 18-in. flights spaced 18 in. apart, 120 ft. long center to center of sprockets, in a tank 4 ft. wide, 4 ft. deep and 100 ft. long, with a stacking conveyor 65 ft. center to center on a 6-in. pitch and the same flights spaced 3 ft. apart, cost \$10,253.

Repairs on this type of tank cost less than on the

bucket-elevator type but, owing to the wear on chain and flights, they amount to a considerable sum where acid water is employed.

During the past two years several slush recovery plants, containing Dorr thickeners and classifiers, have been installed; they have shown the following advantages:

(1) Operation can be controlled so as to produce a product of given specification; (2) recovery of over 90 per cent of the slush solids can be obtained or any lower percentage, as desired; (3) maintenance costs are reduced to a minimum; (4) power and attendance costs are extremely low; (5) additional equipment can be conveniently included in the plant to remove slate, sand and other impurities from the recovered coal, giving a product analyzing 15 per cent ash or less.

The equipment operates continuously and is so designed that no bearings are submerged in the material being treated. Because of the prevalence of acid water, wooden-stave tanks are used for thickeners up to 40 ft. in diameter, while for the larger sizes concrete tanks or tanks with wooden-stave sides and clay bottom built in the ground are used. The plows rotate so slowly that no swirl or agitation is produced. Sufficient tank area can be provided to cause the settlement of all suspended solids, giving a practically clear overflow. In case only the coarser solids are to be removed, a tank of smaller area is provided, so that the finer solids are carried into the overflow with the water. A thickener operating under this condition is termed a hydroseparator. Rough separations can be made at any desired mesh.

#### UTILITY OF CLASSIFIERS IN SLUSH TREATMENT

On anthracite slush, the classifiers can be operated to recover a product that is practically all larger than 48-mesh, or any part of the solids between 48-mesh and 200-mesh can be included in the recovered product. Where solids smaller than 200-mesh must be completely recovered, a thickener is required. Slush treatment generally is practiced to obtain the recovery of fine coal, prevention of pollution and the recovery of clarified water for breaker use.

In the recovery of fine coal it sometimes happens that all the solids are sufficiently low in ash for use at the mines or for shipment; in other cases the slimes are too high in ash for present use or the granular solids also carry so many non-carbonaceous particles that to produce a usable product these impurities must be removed.

As yet Dorr equipment has not been used at any place where all the solids are sufficiently low in ash for use at the mines or for shipment, because this condition is rare except in the Lykens Valley district.

Several plants have been installed to recover the granular coal and more are in course of erection. The first plant of any size for this purpose was installed in the Wyoming field at a breaker producing 5,000 to 6,000 tons per day, and was designed to recover the solids larger than 60-mesh. A Dorr hydroseparator 26 ft. in diameter and 8 ft. deep and three Dorr classifiers were installed. A plan and an elevation of the installation was shown in the issue of *Coal Age* of Feb. 19, 1920, page 351. The slush amounts to about 4,000 gallons per minute, contains about 5 per cent total solids, and is made through a  $\frac{3}{4}$ -in. round-mesh screen. The plus 60-mesh solids form about 40 per cent of the total solids, and the solids between 60- and 100-mesh amount

to 20 per cent additional. This installation is recovering the plus 60-mesh coal, with 15 to 20 per cent undersize and with 40 per cent moisture. On delivery to the stock pile, the product quickly drains to 18 per cent moisture. With breaker shipments averaging 5,000 tons per day, 200 dry tons daily are recovered from the slush. On a number of days the breaker has shipped well over 6,000 tons without taxing the Dorr equipment. The hydroseparator easily takes care of the material when a number of jigs in the breaker are slushed out. At such times the slush will amount to 6,000 gallons per minute for several minutes.

The installation was made in the summer of 1919, and the cost, exclusive of the stacking conveyor line, was as in Table V.

TABLE V. COST OF AN INSTALLATION TO RECOVER SLUSH

Foundations.....	\$1,800.00
Equipment.....	9,225.32
Erection of equipment.....	746.92
Building erected.....	4,965.76
Total cost.....	\$16,738.00

The plant is operated by one man and a 10-hp. motor. During two years of operation no parts of the hydroseparator or classifiers have required replacement and now show little signs of wear. Total operating costs, including 10 per cent of plant cost for fixed charges and 10 per cent for amortization, have been from 9c. to 10c. per dry ton of product.

A slush plant to recover a low-ash granular coal, now being installed in the Wyoming field, consists of a Dorr hydroseparator, 32 ft. in diameter and 8 ft. in depth; eight Deister-Overstrom coal-washing tables, and four Dorr classifiers. It is designed to treat 4,000 gallons per minute of slush made through  $\frac{3}{4}$ -in. round-mesh screen and recover the plus 200-mesh coal with an ash content of 15 per cent or less. The breaker ships from 4,000 to 5,000 tons of coal per day.

#### REFUSE REMOVED FROM EIGHT TABLES

The slush will be delivered to the Dorr hydroseparator, where the bulk of the water and minus 200-mesh solids will be separated and discharged to waste in the overflow. All the plus 200-mesh solids will flow by gravity from the bottom of the hydroseparator to a distributing launder for feed to the eight tables. On the tables the refuse will be removed, and the washed coal will flow by gravity with the water used on the tables to four Dorr classifiers, where the coal will be recovered and dewatered. It is expected that the plant will recover per day about 200 dry tons of coal between  $\frac{3}{4}$ -in. mesh and 200-mesh analyzing less than 15 per cent ash.

This equipment is being installed in a separate building of steel construction and at present construction costs are not available. The power consumption will amount to about 25 hp. Probably one man, and certainly not more than two, will operate the plant. Operating costs, excluding fixed charges and amortization, should amount to less than 10c. per ton of product.

Plants to prevent stream pollution may be of various types, depending on the amount and size of solids that must be retained. One plant installed in 1920 in the Lehigh field consists of a Dorr hydroseparator 30 ft. in diameter and 7 ft. in depth, and two Dorr classifiers. It is recovering the granular solids from 2,200 gallons per minute of slush made through a  $\frac{3}{4}$ -in. round-mesh screen. The purpose of the plant is to remove all the solids that would block the stream into which the breaker slush water must discharge.



Prior to the installation of Dorr equipment two settling tanks of the bucket elevator and drag-flight conveyor type had been used in series, but the stream could not be kept free of slush solids. After the Dorr plant had been in operation only a few weeks, the stream bed for several miles below the breaker had become freed from the solids already deposited, and after seven months' operation no signs of deposit in the stream are apparent.

The construction costs of this installation, which was placed in a separate building one-half mile below the breaker, in order to get plenty of stacking room, were as in Table VI.

TABLE VI. COST OF A PLANT TO PREVENT STREAM POLLUTION

Foundations.....	\$530.00
Dorr equipment.....	6,856.00
Building.....	2,602.00
Wooden pipe line to plant.....	2,800.00
Stacking conveyor.....	4,576.00
Electrical equipment, including transmission line and transformers.....	2,620.00
Labor.....	6,479.00
Total.....	\$26,463.00

The construction cost of this plant is rather high because of the wooden pipe line, transmission line and substation required. In many cases the equipment could be installed in the breaker. If this could have been done in this instance it would have saved at least \$10,000.

This plant is operated by two men, who also look after the disposition of the product on the stock pile, to which it is delivered by an 8 x 18-in. conveyor 120 ft. long. A 15-hp. motor drives the Dorr equipment and a 30-hp. motor the stacking conveyor. Although the slush water comes from the mines and is quite acid, the maintenance costs have been quite low. One casting on the hydroseparator, weighing not over 200 lb., wore out in four months and was replaced by a bronze casting; otherwise the equipment shows no signs of wear from the acid water and abrasive action of the solids. It is too early to figure accurately the costs of operation but operation to date indicates that the cost, exclusive of fixed charges and amortization, is about 7c. per ton of recovered coal. Based on breaker shipments, the cost of preventing pollution is slightly under 1c. per ton shipped, if the recovered coal is considered of no value. If the recovered coal is valued at 18c. per ton, the value of the coal will be equal to the cost of preventing pollution.

A Dorr plant of a different type is planned for a breaker in the Schuylkill field; it probably will be erected during the summer of 1922. At this colliery

the question of pollution is rather serious and an almost complete removal of solids is necessary. A Dorr thickener 90 ft. in diameter will be installed in a tank with wooden stave sides and clay bottom. The feed will amount to 2,200 gallons per minute of slush made through a  $\frac{1}{8}$ -in. round-mesh screen and containing about 320 tons of solids per 8-hr. day. The thickener should remove about 300 tons per day, leaving nothing in the water but the finest slimes. The recovered solids, with about 50 per cent moisture, will be delivered to a conveyor line installed in a concrete tunnel under the thickener for delivery to the storage pile. The recovery of total solids in the slush will amount to more than 93 per cent.

This thickener will produce a clarified water that will be suitable for all washing processes in the breaker. The accompanying illustration shows three thickeners installed in the bituminous field for a similar purpose.

### Utilize Liquid Oxygen in Mine-Rescue Apparatus and as Mine Explosive

A NEW application of liquid oxygen—for use in mine-rescue breathing apparatus—is attracting the attention of the U. S. Bureau of Mines. This innovation has already been tried out in Europe, and Dr. F. G. Cottrell, of the National Research Council, formerly director of the Bureau of Mines, is now investigating for the bureau the use of the apparatus in England and on the Continent. The new apparatus weighs no more than one-half that of the present type, while it may be used by the wearer at one charging of the regenerator for double the time of the present standard type.

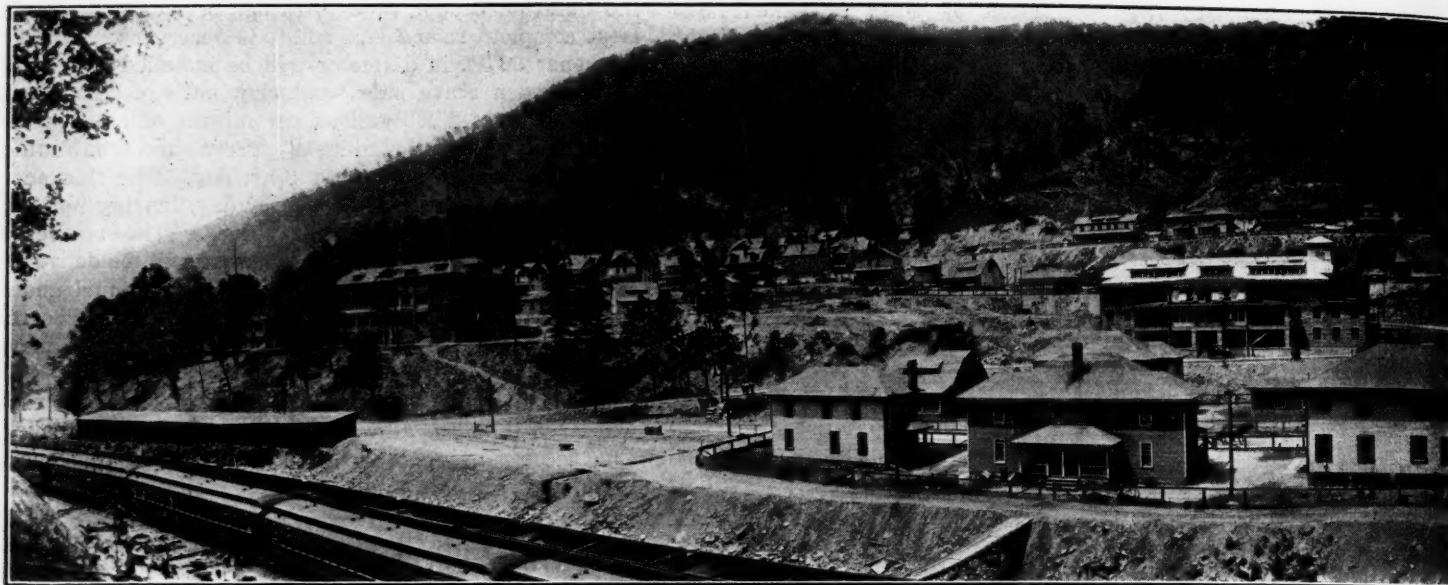
The Bureau of Mines is conducting experiments at its Pittsburgh (Pa.) station with a view to making the use of liquid oxygen explosives practicable in certain mining and quarrying operations. The increasing cost of dynamite and permissible explosives at the time the United States entered the world war caused the Bureau of Mines to investigate all possible substitutes. It was found that the Germans used liquid oxygen explosives extensively in non-gaseous coal mines, in quarries and in iron mines, as well as for destructive purposes in French steel plants. As eminent physicists are promising great improvements in liquefying apparatus that can be used for the production of cheap oxygen, it is possible that the explosive will become so cheap that it will displace dynamite and other explosives where conditions permit its use.

## Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of August\*

(In Net Tons)

Ports	Railroads	1921			1920			1919		
		Cargo	Fuel	Total	Cargo	Fuel	Total	Cargo	Fuel	Total
Toledo.....	Hocking Valley.....	2,964,611	78,923	3,043,534	1,811,256	34,760	1,846,016	2,984,508	84,205	3,068,713
	Toledo & Ohio Central.....	811,064	22,425	833,489	854,755	35,862	890,617	885,291	26,713	912,004
Sandusky.....	Baltimore & Ohio.....	1,684,130	48,591	1,732,721	644,643	20,507	665,150	1,623,051	37,891	1,660,942
	Pennsylvania.....	1,022,312	28,999	1,051,311	723,938	9,312	733,250	936,149	26,512	962,662
Huron.....	Wheeling & Lake Erie.....	1,265,489	35,712	1,299,201	1,123,653	61,928	1,185,581	1,063,902	34,409	1,098,311
Lorain.....	Baltimore & Ohio.....	1,980,137	75,192	2,055,329	1,723,662	131,549	1,855,211	1,961,786	103,710	2,065,496
Cleveland.....	Pennsylvania.....	1,577,958	57,749	1,635,707	445,663	80,582	526,245	1,598,451	163,919	1,762,370
	Erie.....	310,858	10,402	321,260	140,609	10,617	151,226	135,170	4,289	139,459
Fairport.....	Baltimore & Ohio.....	901,756	43,633	945,389	698,814	148,576	847,390	1,246,265	93,481	1,339,746
Ashtabula.....	New York Central.....	1,732,874	55,739	1,788,613	820,404	55,126	875,530	1,260,910	57,258	1,318,168
	Pennsylvania.....	836,695	11,396	848,091	1,478,112	24,251	1,502,363	935,857	5,739	941,596
Conneaut.....	Bessemer & Lake Erie.....	740,278	25,400	765,678	110,116	8,008	118,124	527,052	27,338	554,390
Erie.....	Pennsylvania—West.....	119,601	19,347	138,948	86,901	47,039	133,940	145,472	9,328	154,800
	Pennsylvania—East.....									
Totals.....		15,947,763	511,508	16,459,271	10,662,526	668,117	11,330,643	15,320,556	687,747	16,008,303

\* Compiled by Ore &amp; Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.



PANORAMA OF EAST CENTRAL PORTION OF LYNCH, KY., SHOWING THE HOSPITAL IN THE CENTER

BY HOWARD N. EAVENSON†  
Pittsburgh, Pa.

**E**ARLY in 1917 the United States Coal & Coke Co. obtained options on several tracts in Harlan County, Kentucky, aggregating about 19,000 acres in area, and after careful prospecting by outcrop openings and diamond drilling, completed the purchase late in July of that year. This property is situated in the eastern end of Harlan County, south of the Poor Fork of Cumberland River, and extending across Big Black Mountain to the Clover Fork of Cumberland River, a distance of about seven miles.

It reaches from the Kentucky-Virginia line westward for about six miles. Looney Creek, which empties into Poor Fork, crosses the property for about four miles, and as several of the seams within the property outcrop along this stream, it afforded an easy and, therefore, the logical place for development.

The property is on the northern side of the geological trough formed by the uplifting of Stone Mountain, on the southern, and Pine Mountain, on the northern side; the northern boundary along Poor Fork is practically at the base of Pine Mountain. This area has been described in various geological reports.‡

The main seam on this property is the one known variously as the "C," Benham, Keokee, Taggart, and Roda; it is also called, by the Kentucky Geological Survey, the Kellioka seam of the western portion of Harlan County. This seam averages, in this property, about 5 ft. in thickness, though local rolls reduce this thickness considerably over small areas, and at the extreme western end of the property the seam splits. It is usually clean, although occasionally a small parting occurs within a few inches of the bottom of the seam, and it is one of the best coking and gas coals in the United States. Its average analysis is given in Table I.

\*Excerpt from article read before the American Institute of Mining and Metallurgical Engineers at its Wilkes-Barre meeting, Sept. 12-15, entitled "Lynch Plant of United States Coal and Coke Co." This excerpt gathers together all the information about the boiler plant and tipples. The mine and the dwellings will be described in other articles.

†Consulting engineer.

‡Philip N. Moore: Report on Iron Ores in Vicinity of Cumberland Gap. Geol. Survey of Kentucky [2] 4, Pt. 5.  
J. B. Dilworth: Black Mountain Coal District, Kentucky. Trans. (1912) 43, 129; Kentucky Geol. Survey: Upper Cumberland Coal Field. Bull. 13 (1912). Supplementary Report on the Coals of Clover Fork and Poor Fork in Harlan County (1916).

## An 8,000-Ton Tipple with a Coking Coal Erected

Lynch Plant of United States Coal  
Cent Sulphur and Under 5 Per Cent  
Above Tipple—Belt Conveyors Used

TABLE I. ANALYSES OF COALS FROM "C" SEAM

Number of samples.....	24	Coke.....	70.1
Volatile matter, per cent....	35.09	Ammonium sulphate, lb....	25.0
Fixed carbon, per cent.....	60.47	Benzol, lb.....	29.2
Ash, per cent.....	4.44	Tar, gal.....	7.5
Sulphur, per cent.....	0.59	Gas, cu.ft.....	11,448
Phosphorus, per cent.....	0.005		

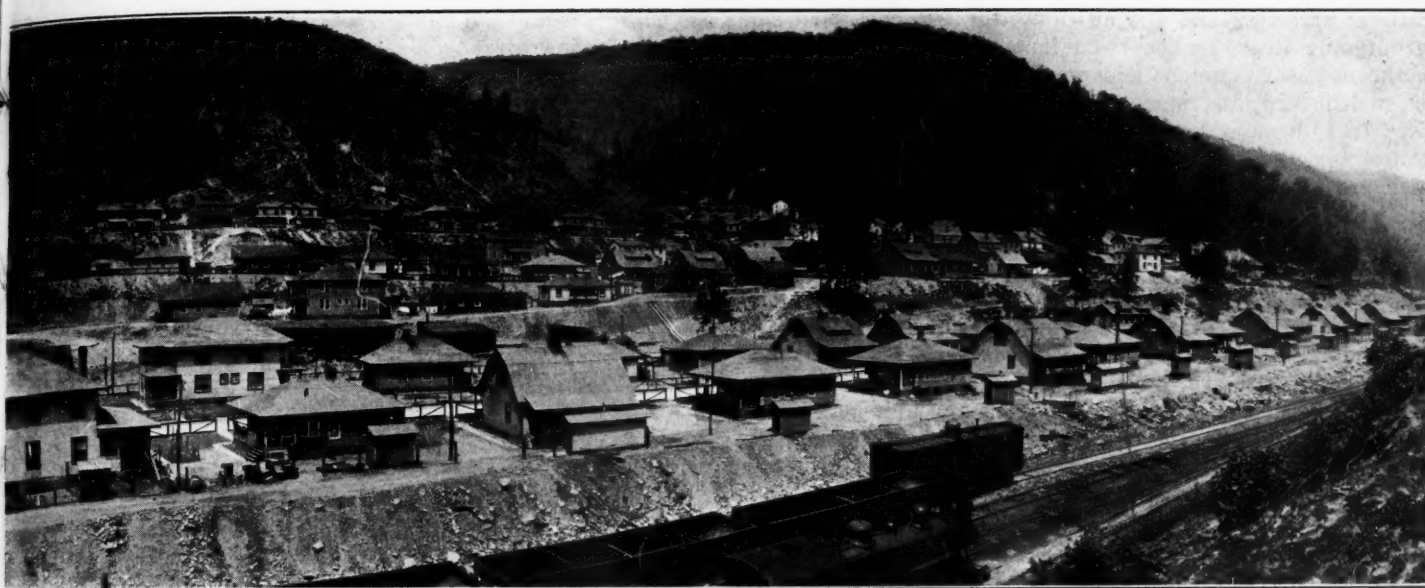
The purchase negotiations were completed late in July and about Aug. 4 the decision was made to start the development of the tract at once and to push it with all possible speed, as the government wanted an additional supply of high-grade high-volatile byproduct coal from which the production of benzol and toluol could be increased. Actual possession of the property was given about three weeks later and on Aug. 26 construction work was started and pushed with all possible speed until after the armistice was signed.

A good survey of the property lines was available, but nothing that showed any topography or the relation of the coal outcrops to the property lines, and the only time available for obtaining these data was three weeks between the two dates mentioned above. A topographic party was organized, and the work of getting the necessary information for the town site layout was pushed as rapidly as possible, using a transit survey for the base lines, and filling in the topography by plane tables.

The scale used was 1 in. = 100 ft., and the contour interval was 10 ft. The site available for the town, all of which will ultimately have to be used, covered an area about two and half miles long, and in places about 2,000 ft. wide. The topography for the plant site layout was not complete until the early part of November, 1917, and the layout map was finished a few days thereafter.

When directions to begin the construction of the plant were issued, the output wanted was 2,500,000 net





OF THE GROUP, AND SEVERAL OF THE DWELLINGS AND THE HOTEL ON THE LEFT

## 5,000-Ton Storage Bin for at Lynch, Kentucky\*

**& Coke Co. Has Coal with 0.6 Per  
Ash—Capacity for 240 Railroad Cars  
Exclusively—Two Rotary Dump Pits**

tons per year. The property could not be attacked, except from the Looney Creek site, without much railroad construction, and as this site was approximately in the center of the tract, and all the coal could be reached from it with a maximum haul of four and half miles, and an average haul of about two miles, it was decided to construct at this point a plant that would have a capacity of not less than 8,000 tons per day.

For this output two mines were projected, one on each side of Looney Creek, pit mouths being placed a short distance above high-water mark, so that as much of the coal as possible would drain to them. The coal from both mines was to be taken to one tippie, at which the entire output would be loaded. It was realized that such a plant would be the largest single loading plant in the United States, perhaps in the world, and its construction gave opportunities for concentration in the line of shops, wash houses, tipples, amusement buildings, housing facilities, etc., that were unique and which enabled the company to build units and facilities of a size that are ordinarily unheard of in the usual coal-mining community.

It was realized that, to obtain prompt development, electric power was absolutely necessary and three second-hand 150-kw. engine-driven direct-current generators were installed with the necessary boilers just as soon as the materials could be assembled; later a fourth unit was added, although ordinarily only three were operated. This temporary power plant was replaced by the permanent plant in August, 1919.

The only public-utility company within reaching distance of this plant had two small power stations, but a substation at Lynch would have had to depend on a single transmission line eight miles long over the top of Big Black Mountain, which it would cross

at one of the highest points in the state. This line probably would be frequently out of order and yet comparatively inaccessible for repairs. It might be years before a loop line could be constructed and, as the power company required the coal company to finance the necessary extensions, the latter company decided to install its own plant in order to have a reliable source of power at all times.

A careful study showed that alternating current to inside substations, for the mine transmission, would result in large savings. On account of the distance that ultimately would have to be reached and of the possibility of the acquisition of property three or four miles west of the power plant (which property has since been acquired) it was decided to generate at 6,600 volts.

### PLANT ARRANGEMENT COMPACT AND ACCESSIBLE

The new plant accordingly was laid out for two 1,875-kva. three-phase 60-cycle 6,600-volt turbo-generators with the necessary switchboard and control apparatus. Each machine is mounted on a heavy steel framework, under which is placed the surface condenser; directly under the condenser is placed the Radojet air pump and the centrifugal circulating pump. The arrangement is compact and accessible. The foundations of the pumps and condensers are built on the ground floor and the floor between the turbo-generators is covered with an open steel grating, which allows the air to ascend from the condenser floor and also permits the use of the crane for any repairs to the condensers, as the building is entirely open after the gratings are removed.

The general layout of the plant is shown in Fig. 1. The cold well is under the floor of the main turbine room and the circulating pumps discharge into a steel-pipe line which feeds the water into a spray pond built as a part of Looney Creek, which is outside of the power plant. Sufficient room has been left in the building to install an additional turbine as large as 10,000 kva., should the demand warrant it, and the crane is large enough to handle a machine of this size.

The switchboard is on the same elevation as the turbo-generators and the control apparatus is in a room immediately back of it. On top of this room are the

lightning arresters and the disconnecting switches on the outgoing lines; in the room immediately below it are the necessary current and power transformers for the switchboard instruments and the 6,600-400 volt power transformers for the fan and tipple motors.

Adjoining the turbine room is the pump room, in which are installed two centrifugal boiler-feed pumps, each with a capacity of 600 gallons per minute, two centrifugal pumps for the town water supply, each with a capacity of 800 gallons per minute against a 500-ft. head, two centrifugal pumps for circulating the hot water through the central heating system, and two fans for the forced draft for the underfeed stokers. All of these machines are driven by steam turbines, the pumps by direct connection and the fans through gear reductions. Two steam engine-driven compressors supply air for pumping the wells, operating the rotary dumps in the tipple, greasing mine cars, operating the loading gates under the bin, cleaning motors and shop tools, etc. These machines have a combined capacity of 2,200 cu.ft. free air per minute to 110 lb. pressure. Immediately adjoining the pump room is the boiler room, in which are installed three 750-hp. Stirling watertube boilers, operating at 175 lb. steam pressure and 100 deg. superheat. There is ample room inside the building for a fourth unit and provision has been made outside for the installation of three similar units should such an increase in power become necessary. These boilers are equipped with Taylor underfeed stokers, an underground ash-cleaning system, and an overhead steel coal bin with a capacity of about 250 tons, from which the coal flows by gravity to the stoker

hoppers. This overhead bin is filled with slack coal and with the mine refuse, if any, delivered by a belt conveyor from the tipple. The boilers are connected by a steel breaching to a reinforced-concrete chimney of 9 ft. internal diameter and a height of 205 ft.

The ashes are taken from a small storage pit under the back of the boiler settings, by roller-bearing cars, to a point outside the building, where they are dumped into a skip hoist (Fig. 2), which delivers them to the slate conveyor, by which they are carried to a bin on the mountain side. The skip hoist is also arranged so that any garbage or refuse of any kind collected around the town can be dumped into it and disposed of with the ashes and the mine waste.

#### NO WOOD USED ANYWHERE IN THE BUILDING

The steam lines are all of extra-heavy steel pipe, flanged, with Van-Stone joints, built in a loop entirely around the plant, and provided with the necessary expansion joints, so that any unit can be operated from any one of the boilers. The entire building is made of reinforced concrete; sash and doors are all of steel; floors are of concrete with steel-plate coverings over the pipe trenches; no wood is used in the building.

For a long distance above the power plant, masonry walls have been built along both sides of Looney Creek, to confine it within a definite channel, and part of this area has been utilized for a spray pond, the water being kept in it by a movable steel dam at the lower end of the power plant. When there is ample water in the creek the condensing water is drawn directly from it through movable screens, to keep out leaves, etc.; when

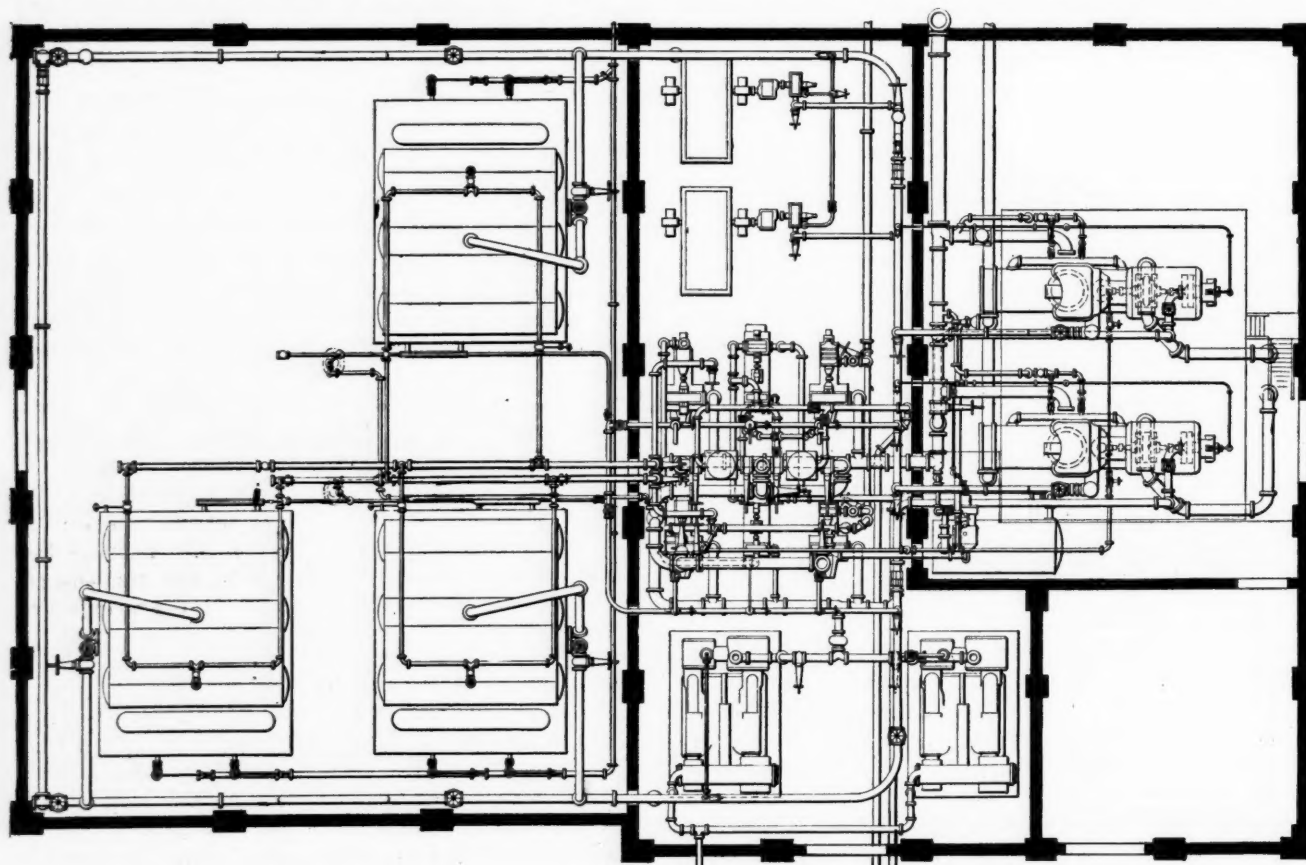


FIG. 1. GENERAL LAYOUT OF POWER HOUSE WITH DETAIL OF PIPING

On the right are two 1,875 kva. 6,600-volt turbo-generators. Directly under each machine is placed its surface condenser and below that its air pump. The floor between the generators is covered with an open steel

grating for ventilation and for a crane opening. The pump room in the center has two boiler-fuel and two town-supply centrifugal pumps and two pumps to supply hot water for central heating. On one side

of the pump room are two force-draft fans for the underfeed stokers and on the other side two air compressors for well pumping, for dumping cars, and for other odd jobs about the plant.



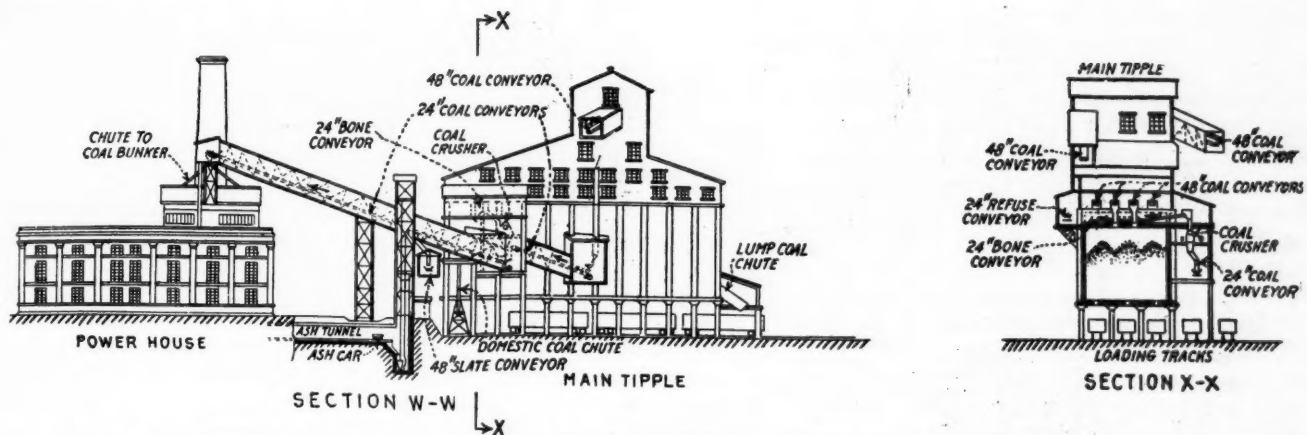


FIG. 2. SECTION OF THAT PART OF THE LYNCH TIPPLE DEVOTED TO STORAGE AND TRANSPORT OF MINE REFUSE, BOILER ASHES AND GARBAGE

The section WW is taken at the point indicated in Fig. 4. One 24-in. bone-coal conveyor and one 24-in. slack conveyor carry the fuel to the 250-ton steel coal bin above the boilers. The ashes go to a small storage pit at the back of the boiler settings where they are loaded to cars, run to a skip hoist and taken in the slate conveyor to a bin on the mountain side. Into the same hoist is dumped any garbage or refuse collected around the town. Figs. 4 and 5 show more of these details.

the supply is scarce, the dam is raised and the spray pipes put in operation.

As already stated, the output for which the plant was designed is 2,500,000 tons per year, or, roughly, 8,000 tons per working day; and as it was expected that this output would eventually be increased, and because any tipple should be designed so that it will handle the coal easily at the greatest rate at which it can be delivered to it, which usually is during one of the morning hours, the tipple was planned for a mine capacity from each side of 1,000 tons per hour, or a total capacity of 2,000 tons per hour, which is 16,000 tons per 8-hr. day.

As all the coal was to be shipped for coking purposes, no preparation, so far as sizing was concerned, was necessary; but as it was probable that the coal from more than one seam might be brought to the tipple and also because of occasional impurities in the bed, it was decided to equip the tipple with picking tables so that the coal could be cleaned by hand.

#### TWO PICKING TABLES FOR EACH SIZE

The experience at the Pocahontas mines had shown that it is not feasible commercially to pick coal less than 1½-in. in size, so the screens were designed to make coal over 6 in., between 6 in. and 3 in., and between 3 in. and 1½ in.; all the coal under 1½ in. goes directly to the bin.

Picking tables were installed capable of handling the output of each size at a speed of 60 ft. per minute and at a depth on the table of not more than the larger limit of the size handled, or, in other words, in the size from 1½ to 3 in. the coal while completely covering the picking table would be not more than 3 in. deep. Two tables were installed for each of the three sizes, making a total of six picking tables.

Owing to the location of the plant, at the end of a single-track railroad, on a 2-per cent grade and about five miles from the nearest railroad yard, a number of trains are needed to keep it supplied with cars. For this reason the track system, both above and below the tipple, was laid out for a capacity of 240 cars, or 12,000 tons per day, thus allowing for some margin over the day's run and also for a future increase in capacity.

The empty tracks were designed for 60-car trains, and the incoming train is pulled through to the upper

end of the storage yard and dropped into the tipple tracks. Below the tipple the cars are dropped over a railroad scale and weighed and then into the storage yard with tracks of sufficient length for 90-car trains. All the tracks are laid with 80-lb. steel rails.

Even with this provision it was felt that the operation of the plant often would be hindered by the shortage of cars and that on more than one occasion when cars would be expected during the morning, the men would not enter the mine because they could not see them, and for that reason the run would be stopped because what cars were on hand already had been loaded. It was thought advisable, therefore, to provide a 5,000-ton storage bin.

#### THREE LOADING TRACKS BENEATH BIN

The coal is of a hard, splinty nature and comes from the mine in large slabs. As coal passing over the 6-in. screen was likely to be entirely too large to load through a hopper, the tipple was designed to deliver this large coal to the lower end of the bin, where chutes convey it separately to the cars. After a careful study of the most economical shape of bin for the desired capacity and the space necessary for the picking tables, screens, etc., three loading tracks were decided upon, the bin being placed directly above these. The coal is loaded from the bin into the cars through openings approximately about 2 ft. 6-in. x 3 ft. These are closed by steel plates, operated by air cylinders.

The use of a bin made it necessary to place the picking tables some distance above the ground; and as it was advisable in order to reduce the average haul of the coal and to drain as much of the seam as possible, that the pit mouth be placed as close to the flood level as was practicable, conveyors were installed for raising the coal from the ground to the top of tipple.

Several plants having been inspected it was decided on account of the extremely large capacity desired to use rotary grizzly screens for the smaller sizes and bar screens for the larger sizes. Shaking screens would have required very large units, which would have occasioned much vibration. The rotary grizzly screens revolve at slow speed, consume little power and screen efficiently.

The use of steel-pan conveyors was carefully considered, and plans and specifications for a steel tipple with such equipment and shaking screens were pre-

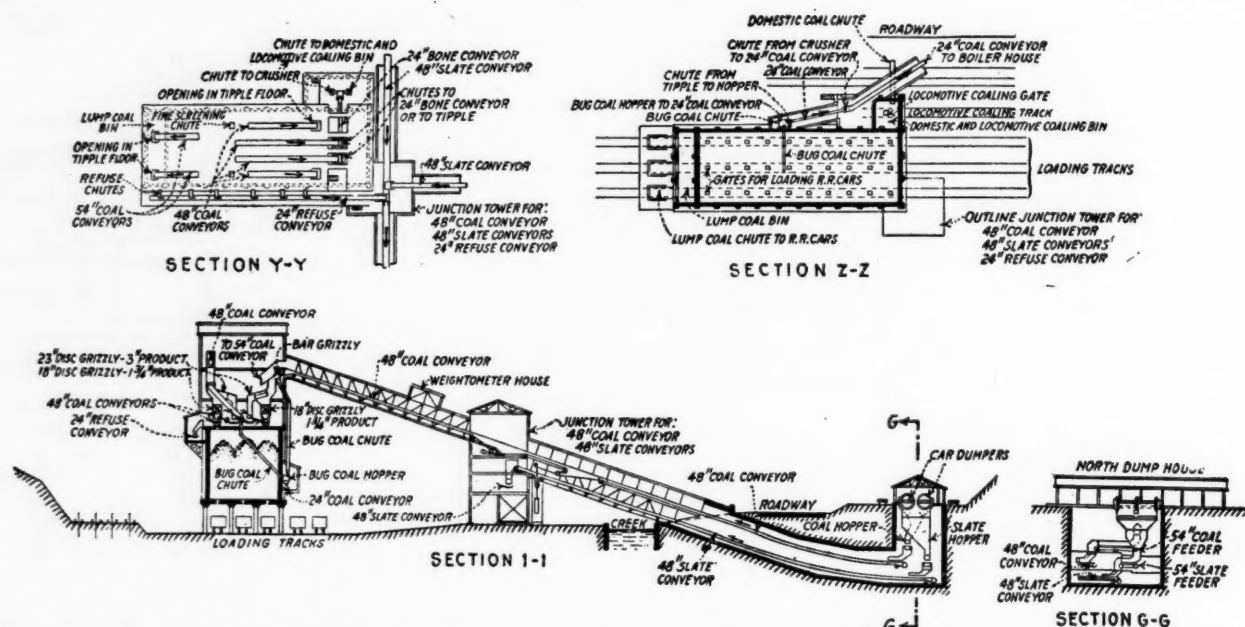


FIG. 3. SECTIONS OF LYNCH TIPPLE HORIZONTALLY OVER PICKING TABLE AND OVER STORAGE BIN AND ALSO VERTICALLY THROUGH THE CONVEYOR FROM THE NORTH-SIDE DUMP

The large bin holds 5,000 tons and has a section at the far end for lump coal 6 in. in diameter and over. Three loading tracks pass under the huge bin. The lower illus-

tration shows the long belt conveyors by which coal and slate are carried from the north-side dump under the roadway and over the creek to the preparation plant.

Slate cars can be discharged on either dump of either of two tracks. For location of sections YY and ZZ see Fig. 4, and for section 1-1 see Fig. 5.

pared. After the inspection of other plants, however, it was decided to use rubber-belt conveyors, the only objection to their use being that the tipple would be removed farther from the dump. Even though an increased quantity of steel would be involved in the longer conveyor ways the rubber-belt conveyors are much cheaper than the steep-pan conveyors would have been and their size was well within good practice. Roller-bearing idlers of heavy design were specified throughout and the top and bottom pulleys and the gear drives are unusually heavy and rugged, all gears being of cast steel. The use of as few sizes of shafts as possible throughout the tipple was specified, even if some were a little large, in order to reduce the number of boxes and repair parts to be carried in stock.

#### AMPLE PROVISION FOR DISPOSAL OF MINE REFUSE

Around the usual coal mine, the slate and mine refuse, if any is encountered, is disposed of with great difficulty. In my opinion, in most mines not enough attention has been paid in the design of the plant to handling this material, the disposal of which is therefore unnecessarily expensive. On account of the thinness of the coal in some places and as draw slate probably would be encountered in some headings, provision was made for handling 400 tons per hour through the tipple and to the slate dump by the ordinary tipple crew.

As the cars used were of the solid-end type, the use of rotary dumps was necessary; and so in order to get the capacity desired, it would be necessary to dump two cars at once. For this reason the equipment was designed so that two cars of coal, two cars of slate, or a car of slate and one of coal could be dumped at the same time. The handling of such a volume of coal and slate at each dump meant the use of a separate belt for handling the slate.

The rotary dump (Fig. 3) discharges the contents of the cars into hoppers under the dump, these being so arranged and so covered by hinged gates that coal falls into one bin and slate into another, and, by air-

operated valves, the contents of any car can be easily diverted into either bin. From these bins the coal passes by short apron feeders of very heavy rubber belts to the coal conveyor, and the slate to the slate conveyor (Fig. 4). The two main conveyors are carried in the same galleries to the tipple, the coal conveyors in each case being over the slate conveyors.

Rotary dumps ultimately are to be installed in duplicate in each dump house but at present one of them has only one dump. The dumps are operated by compressed-air cylinders and revolve 135 deg. and back to the starting point, there being a positive stop so that the rails in the dump come at each revolution exactly to the same elevation as those leading to the dump. The dumps are guaranteed to have a capacity of four dumps per minute, or, as the cars hold about three net tons, a capacity of twenty-four net tons per minute. This easily can be maintained over long stretches of time and for short periods can be considerably exceeded.

#### STORAGE TRACKS HOLD ABOUT 100 MINE CARS

For each mine, storage tracks above the dumps hold about 100 mine cars, which are automatically fed into the dumping apparatus by car feeders. After leaving the dumps the empty cars are handled by trip makers, which also are used to raise the cars to a higher level, in order to save excavation. The height from the dump to the conveyor feeder is regulated entirely by the arrangement of chutes, and as this was designed so that either car could go into either dump, it required a considerable excavation below the dumps, the deeper of the two conveyor pits being about 54 ft. The conveyor pits, as well as the lining of the conveyor galleries from the dump pits to the surface of the ground, are made of reinforced concrete, the outside of which in each case was water-proofed with tar and felt paper. The supports for the floors in the dump hoppers are of heavy steel girders.

From the dump pit in each case, the coal conveyors carry the coal to the top of the tipple, where it passes over a bar grizzly having a 6-in. opening (Fig. 3). The



coal passing over the bar grizzly is carried by chutes to the lump picking tables, and is then dumped into the lump coal bin at the end of the tipple.

The coal passing through the bar grizzly goes over a 23-in. revolving disk screen (Fig. 3) which takes out all material larger than 3 in.; this material goes through to the picking tables, and then to the main bin or through a chute to the domestic and locomotive-coal bin. The material passing through this screen goes to an 18-in. rotary disk screen, which separates the material larger than 1½ in.; this goes through picking tables, thence into the bin.

In the morning the first coal loaded out of the mine is the "bug dust," or machine cuttings. In certain parts of the mine a small parting about 3 in. above the bottom, which occasionally is 1 in. thick, and is considerably higher in ash than the rest of the coal is cut out by the machines. Occasionally, also, the machines dig into the fireclay bottom, which is mixed with the bug dust. As this bug dust is loaded into separate cars, it is easily seen on the conveyors; and thus by the opening of a flap gate at the end of each conveyor it is sent direct to a bug-dust hopper (Fig. 3), whence a conveyor takes it to another conveyor, by which it is transported to the boiler house.

The material from the picking tables, if of a combustible nature, is dropped to the floor, and, at suitable intervals when the work is slack is deposited on the conveyor under the picking-table floor, which dumps it into a crusher in which it is reduced to a nut-coal size; here it drops to a conveyor and goes to the boiler-house coal bin. The 3- to 6-in. lump coal can be handled this same way, if desired. The other material from the picking tables is wheeled to the side of the bin and dropped through suitable refuse chutes to the belt conveyor, which deposits it on the slate conveyor. The locomotive coaling bin is used for coaling locomotives on the railroad, which is done through a gate where the coal is weighed; the coal from this same bin also

drops by a chute to a point along the road, whence it can be taken to the houses by truck or wagon.

The slate from the north-side dump (Fig. 5) is taken by a slate conveyor to the junction tower, where it is dumped upon a conveyor (Fig. 4) which finally deposits it in the slate bin on the side of the mountain. The slate from the south-side dump is taken on a conveyor to the junction tower at the end of the bin, where it is also placed on a slate conveyor for final disposition.

The slate bin on the mountain side has a capacity of about 400 tons, and the slate is drawn from it through air-operated bin slides into a steel stacking larry, which is so arranged that the slate is drawn from the bottom of the larry by a conveyor that can discharge to either side or in front, thus doing away with the necessity of moving tracks at frequent intervals. This larry can build its own track directly ahead of it or it can make a fill from 30 to 40 ft. wide on top. Pieces of slate weighing as much as 200 lb. are handled by this larry and are discharged at a distance of from 15 to 20 ft. from the center of the track.

#### NINE CARS CAN BE LOADED AT ONE TIME

The coal is drawn from the main bin through cast-iron boxes, which are embedded in the concrete floor and are closed by heavy steel plates, sliding in cast-iron grooves. These gates are operated by air cylinders having a stroke equal to the opening of the gate and measure about 30 x 36 in. They are spaced approximately 12 ft. apart and the cylinders are operated by three-way cocks, which are turned by the loader walking along the platform, from which he can estimate the proper loading of the cars.

Three cars can be loaded on each track, or a total of nine cars, at one time, and it is possible, if the bin is kept full of coal, to load 500 tons of coal in three minutes. The lump coal at the end of the bin is loaded through chutes, which are raised or lowered, to shut off the coal supply, by electric windlasses (Figs. 3 and 4). The main bin is built of reinforced concrete and was calculated to have a working stress of 500 lb. per sq. in. for the concrete and 10,000 lb. per sq. in. for the steel. So far as I have been able to ascertain, it is the largest reinforced-concrete bin in the world. The

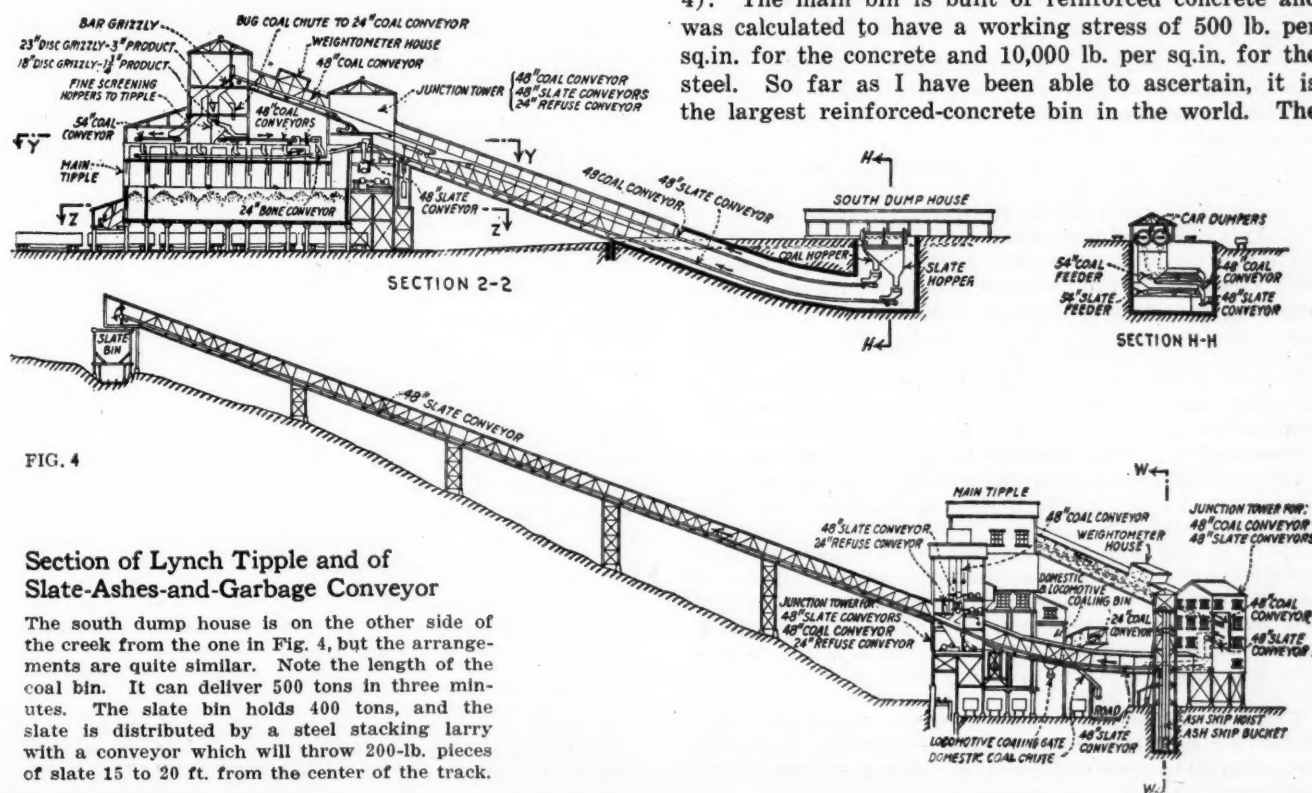


FIG. 4

#### Section of Lynch Tipple and of Slate-Ashes-and-Garbage Conveyor

The south dump house is on the other side of the creek from the one in Fig. 4, but the arrangements are quite similar. Note the length of the coal bin. It can deliver 500 tons in three minutes. The slate bin holds 400 tons, and the slate is distributed by a steel stacking larry with a conveyor which will throw 200-lb. pieces of slate 15 to 20 ft. from the center of the track.

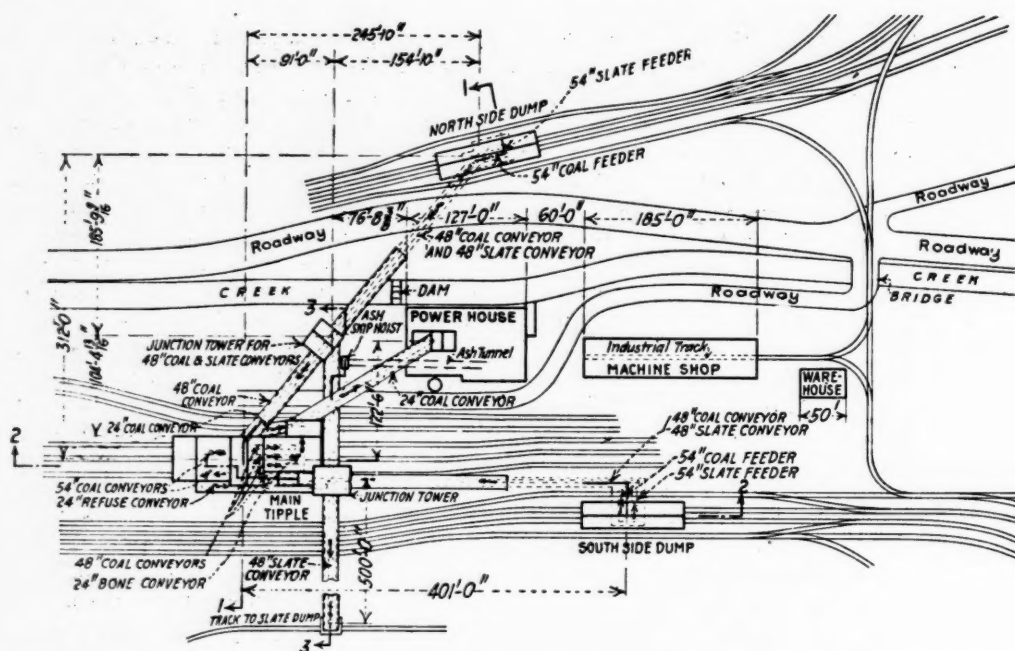


FIG. 5.

### General Plant Layout

This illustration does not, however, show the trackage for the storage of 90-car railroad trains or that above the rotary dumps for 100 mine cars. The property is operated by two mines, one on each side of Looney Creek.

superstructure on top of the bin, the conveyor galleries, and the junction towers are of steel, covered by corrugated galvanized sheets. An idea of the size of the tipple may perhaps be obtained from the fact that there are 1,100 tons of structural steel in these structures and in the dump pits.

As it was realized that much dust would be forced through the openings in the picking-table floor by the coal dropped into the bin below, four large steel ventila-

tors extending from the top of the bin through the top of the building were built. It was not thought that the coal would be dusty enough to cause any inconvenience in the rest of the structure, but it has been found that both at the dump pits and in the tipple house the dust furnishes a serious problem. For this reason a ventilating system is being provided. All machinery is electrically driven, using 440-volt induction motors and spur-gear speed reducers.

### So-Called Anthracite of Virginia Really Is a Much Softer Coal

THE so-called anthracite of Virginia is not really anthracite but is a much softer coal, according to the U. S. Geological Survey. The coal mined in some parts of this field compares favorably, except that its ash content is greater, with the coal from the Pocahontas field, but that from other parts is harder, contains less volatile matter, and consequently approaches anthracite more nearly in general composition.

The coal is of lower Carboniferous (Mississippian) Age and is found at many places in the ridges of the Appalachian Valley from the Potomac River nearly to the Tennessee line. It is best developed, however, in Montgomery, Pulaski and Wythe Counties. It occurs in what has been called the Price sandstone, which outcrops in a narrow belt, dipping south at angles ranging from 20 to 30 deg., at the southern foot of Brush and Little Walker mountains, from a point six or eight miles northeast of Blacksburg to a place almost due north of Pulaski. At that place the outcrop turns to the south, and it pursues a zigzag course around anticlinal and synclinal points to Pulaski, where it passes beneath and is concealed by the Shenandoah ("Valley") limestone.

The coal also occurs in Price Mountain, southeast of Blacksburg, where it lies in an anticlinal fold and dips under the Shenandoah limestone in all directions. In Wythe County the coal and associated rocks form an overturned syncline just north of Max Meadows, but its outcrop is largely concealed by a tongue of the Shenandoah limestone that has been thrust over upon it. The coal also reappears at the foot of Little Walker Mountain, northwest of Wytheville, and extends westward nearly to Marion, in Smyth County.

Two beds of coal have been mined in this field, known as the Big or Merrimac bed and the Little or Langhorne bed. The Merrimac bed seems to be present throughout the part of the field mentioned above, with a thickness rang-

ing from 5 to 11 ft., but in every mine the bed contains many shale partings that can be separated from the coal only with difficulty, and consequently the coal as it is put upon the market contains a large percentage of ash. The Langhorne bed also is generally present throughout the field, but so far as known it is thick enough for commercial mining only west of New River and north of Pulaski, where it ranges in thickness from 3 to 5 ft. In that part of the field west of Wytheville the coal beds are generally thinner and more impure than they are farther east.

The chemical composition of the coal is shown by the accompanying analyses. All the analyses represent the Merrimac bed, except that from Little Walker Mountain north of Pulaski, which is from the Langhorne bed. The analyses show that the most objectionable feature of this coal is its large percentage of ash.

The analyses also show that the coal ranges in rank from semi-bituminous to semi-anthracite, but that none of it approaches the composition of Pennsylvania anthracite. According to U. S. Geological Survey standards, bituminous coal has a fuel ratio of less than 3; semi-bituminous, 3 to 6; semi-anthracite, 6 to 10; and anthracite, 10 or more. Those whose fuel ratio is less than 6 should be sold as semi-bituminous or "smokeless" coals, and those whose fuel ratio is more than 6 should be sold as semi-anthracite. The present practice of putting them all on the market as Virginia anthracite should not be permitted, as the term is misleading.

#### ANALYSES OF COAL FROM MONTGOMERY, PULASKI AND WYTHE COUNTIES, VIRGINIA

Location	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	B.t.u.	Fuel Ratio
Price Mountain:							
South side.....	3.6	9.5	67.6	19.3	0.46	11,850	7.12
North side.....	3.0	10.9	64.2	21.9	0.68	11,670	5.89
Brush Mountain:							
Near Blacksburg.	1.9	14.0	68.9	15.2	0.52	12,740	4.92
Poverty Gap,							
New River....	1.6	13.3	61.5	23.6	0.67	11,400	4.62
Little Walker Mountain, north of Pulaski.....	4.6	10.0	71.3	14.1	0.57	12,520	7.13
Syncline northeast of Max Meadows	3.8	9.4	62.2	24.6	0.75	10,960	6.62





# Problems of Operating Men

Edited by  
James T. Beard



## Plain- vs. Roller-Bearing Tests

Comparative Tests of Plain- and Roller-Bearing Equipment of Mine Cars, at Carbondale, Pa., Conducted with Absolute Fairness—Witness Corrects Certain Statements Reflecting on Said Tests

GLANCING through some back numbers of *Coal Age*, my attention was arrested by certain statements made by W. H. Noone, in his letter, *Coal Age*, Vol. 18, p. 449, which tended to discredit the tests made at Carbondale, Pa., Nov. 19, 1916.

These tests were made by the Hyatt Roller Bearing Co., in the presence of a large number of mining engineers and mine officials. The object of the tests was to demonstrate the superiority of roller-bearing equipment for mine cars. Having been present, myself when these tests were made I feel competent to speak regarding them.

Personally, I was deeply interested in the tests, having been engaged for more than a year previous in the design and construction of a dynamometer car to be used in making similar tests. In that work I was associated with the Engineering Department of the University of Illinois. The design of the Illinois car had been completed in June, 1915, and it was not until June, 1916, that we had any knowledge of the same class of work being undertaken by the Hyatt Company.

At the Carbondale tests, I was given every opportunity to inspect the equipment of the cars and became thoroughly familiar with every detail of each test. The result was that I had an intimate knowledge regarding the preparation that had been made to render the results reliable as a means of comparing these two types of bearings for mine-car wheels.

### TYPE OF BEARING USED IN TESTS

On p. 450, in the issue of *Coal Age* to which I have referred, Mr. Noone says, "It is my belief that the poorest type of plain-bearing equipment was used, at the time of making that test." This statement is far from being correct. As a fact, the cars were mounted on one of the best types of plain bearings, known as the Fleming self-aligning type.

Care had been taken in the selection of cars whose bearings had been well run in and were in the best of condition for giving favorable results in the tests. I wish it could be said that the roller bearings used in the tests were in equally good condition. Had that been the case, I believe a less value than 13 lb. per ton would have been found for the drawbar pull on the roller-bearing cars.

It so happened that axles of a somewhat higher carbon content had been ordered for this test and had only reached the mine a day and a half before the test was to be made. No flat-nosed finishing tool had been used after the turning; and it could be readily imagined that the axles were in no condition to give the best results in a test of roller bearings.

Owing to the shortness of the time, there was only opportunity for making one trip into the mine and return, so that it can be truthfully said the roller-bearing cars used in the test had not been run in, as the distance they had traveled would not exceed six miles at the most.

### RATE OF ACCELERATION IN STARTING THE TWO TRIPS

Again, Mr. Noone refers to the pull required to start the plain-bearing trip, as being twice that needed to start the roller-bearing cars. His remarks on this point seem to imply that the whole truth has not been told. He says, "No mention is made . . . that the trip mounted on roller bearings was started slowly and gradually, while the trip mounted on plain bearings was started off at two miles per hour, that speed being picked up at the beginning."

Evidently Mr. Noone did not know that an electric type of speed indicator was used, which had to attain a certain speed before the pen would indicate correctly. As a result, the speed curve follows the zero line, on the chart, a short distance before rising.

No! The plain bearing trip did not start off at two miles an hour, as Mr. Noone supposes, although it accelerated more rapidly than the roller-bearing trip. It is true, as he states, however, that the roller-bearing cars covered twice the distance the plain-bearing trip was hauled, before they attained the same speed.

In order to complete the discussion of this point, let me say the initial pull required to start a trip must overcome the static friction and be sufficient, besides, to accelerate the mass until the desired speed is attained.

Taking the data from the blueprint, as closely as possible, I estimate that it took the plain-bearing trip about 13.5 sec. to reach a speed of two miles per hour, while the roller-bearing trip re-

quired about 20 sec. to attain the same speed. The first estimate is equivalent to an acceleration of 0.15 mi. per hr. per second, while the second shows the acceleration of the roller-bearing trip was 0.10 mi. per hr., per sec.

Converting these into feet per second, per second, and finding the force required to accelerate a ton at that rate, shows that the plain-bearing trip required an accelerating force of 13.8 lb. per ton, while the roller-bearing trip needed only 9.2 lb. per ton, owing to the acceleration being more gradual.

### COMPUTING THE STARTING FORCE

The total starting force for plain bearings, computed from chart and weight of trip, was 178.6 lb. per ton. The same for roller-bearings was 90.6 lb. per ton. Subtracting from these total values the force, per ton, required for acceleration gives for the force, per ton, required to overcome static friction alone, 164.8 lb. for the plain-bearing trip and 81.4 lb. for the roller-bearing trip.

Thus, after making full allowance for the fact that the plain-bearing trip was started at a 50 per cent greater speed we see that it took more than twice the pull to overcome static friction only, in plain-bearing cars, as compared with roller-bearing equipment.

In closing, let me say, I have no reason to question the absolute good faith in which Mr. Noone made the statements to which reference has been made. I am confident he was sincere and had no desire to cast any reflections on the development that science has made possible in mine-car equipment.

A. C. CALLEN,

Professor Mining Engineering,  
West Virginia University,  
Morgantown, W. Va.

### Working Pitching Seams

*Chute mining limited to seams having an inclination not less than thirty degrees.*

REFERRING to the inquiry regarding the working of a steep seam of coal, and the reply suggesting the method known as "chute mining," *Coal Age*, July 28, p. 142, it would seem that the reference here was to a seam having an inclination of 33 deg., instead of 33 per cent.

The angle of repose of bituminous coal on sheet iron when both are dry is 26 deg. Then, assuming the chutes are lined with sheet iron, the angle of inclination should not be less than 30 deg. to enable the coal to slide freely down the chute, and it seems probable, there-

fore, that this reply assumes a pitch of 33 deg.

A 33 per cent pitch corresponds to an angle of inclination slightly more than 18 deg. referred to horizontal measurement, or 19 deg. referred to inclined measurement. In either case, adopting chute mining would necessitate pushing the coal down the chute even if they were lined with sheet iron, which would be both expensive and dangerous.

#### ROOMS TURNED ON THE STRIKE IN A SEAM PITCHING 20 DEG.

The Owl Creek Coal Co., at Gebo, Wyo., are mining on a 20-deg. pitch. The main haulage slope is driven on the full dip of the seam and cross-entries or strike levels are turned at right angles to the main slope. From the cross-entries or levels, stub slopes are driven on the full dip of the seam and rooms are turned to the right and left of these on the strike of the seam.

The miners push their coal to the mouths of their rooms, from which point it is drawn up to the levels above by a small hoist located at the head of each stub slope. On the levels, locomotives haul the coal to the main slope where it is hoisted to the surface.

It may be of interest to know that the coal is cut, in this mine, by standard Goodman shortwall machines, which are also used in drawing back the pillars. No difficulty is experienced in making these machines cut up the pitch.

In drawing back the pillars, the rooms are widened on the high side and the machines are operated successfully cutting along the rib. For driving the slopes, the company's mechanics have mounted a breast machine on a truck. It is arranged in such a manner as to allow of its being swung from side to side, in order to cut the full width of the slope or entry.

CHARLES M. SCHLOSS.

Denver, Colo.

#### Model Room Switches

*Safety and security of operation assured by attention to details in laying a mine switch.*

**A**VOIDING danger of derailment of cars at mine switches brings the suggestion, from an Indiana trackman, that the use of guardrails, at switch points and frogs, will be effectual, *Coal Age*, June 30, p. 1163.

It is unnecessary to enlarge on the necessity of avoiding the derailment of mine cars, at room switches. Not only is this important, in order to prevent loss of time and the expense of putting the car back on the track, but there is every possibility of some one getting hurt when a car weighing anywhere from 1 to 3 tons is derailed and must be replaced on the track.

There is one objection to having too many guardrails, however, especially in machine mining where the machine cable is attached to the trolley, or power line, located on the opposite side of the track from that on which the rooms are turned. There is always

danger of the cable being caught or fouled in one of these guardrails when the machine is proceeding toward the face of a room to cut the coal.

Let me suggest the importance of giving attention to a few essential points when laying a room switch or parting, as we call it, if we are to lessen the risk of accident by derailment. The points I have in mind are:

First, where locomotives or cutting machines must pass over a switch and enter the room, or where cars of large dimensions and capacity are employed, never use less than a No.-2 frog, in laying a room switch. This will give a good length of lead rail that will allow the locomotive or cutting machine to pass in and out of the room with the utmost freedom.

#### CHOICE OF LATCHES OR RAIL POINTS

Now, a word about latches and switch points. From my own experience, I do not favor the use of latches, for iron under 30 lb. per yd., or where animal power is used in hauling. The latches are hard to keep clean and in repair and there is danger from the common practice of drivers to kick the latch when riding on the front end of a car, which is a dangerous habit.

In the use of rail points, under the conditions just mentioned, there need be little danger of derailment if the switch is properly laid and a No.-2 frog employed. The point rails should be nicely pointed and made just a trifle higher than the rails they parallel. Care must be taken to lay all rails to a true gage.

In locomotive haulage, using 6-, 8- or 10-ton locomotives, all switches should be of the latch type and made of heavier iron than in animal haulage. The switch should be thrown by a lever, parallel to and 36 in. from the rail, so that there will be no danger of a snapper or driver tripping over it and falling. While writing this, I have wished that I could always have these arrangements, which would go far toward making a model mine in respect to haulage.

Gans, Pa.

R. W. LIGHTBURN.

#### Cut Mine Timbers to Measure

*Mine accidents largely due to the dull axes and saws of miners. Timbermen as important as safety inspectors.*

**L**OOKING over the examination questions of the last bituminous mine inspectors' examination, held at Pittsburgh, Pa., as published in *Coal Age*, Aug. 11, p. 221, my attention was arrested by one question in particular, which asked for the cause of the greatest number of accidents in mines.

The answer stated very properly that the chief cause of these accidents were falls of roof and coal at the working face; and recommended, as a means of reducing the number of such accidents, the employment of safety inspectors to look after the men; a plentiful supply of timber of the proper kind to be kept constantly on hand, in each working place; and, lastly, a systematic method of timbering wherever that is practicable.

I agree fully with these suggestions, but do they go far enough? Is it not true that with the employment of safety inspectors in our mines, the number of accidents still continues high in comparison with the death rate in some other countries?

Now, what I have to say, is not to be understood as recommending that safety inspectors should be eliminated or their employment discontinued. Instead, my idea is that not sufficient attention is given to the matter of sending timber into the mine already cut to the required length.

We all know that the majority of miners do not keep their axes and saws in condition. When the posts sent in to them are not the right length most miners will throw them aside, for the present, rather than take the time to cut them to the proper length with a dull axe or saw. The miner continues loading his coal and the needed posts are not set in time to avoid the accident that is almost sure to follow.

Allow me to suggest, here, that good timbermen are as important, at the working face of the mine, as safety inspectors. In a large percentage of the mines of this country, the timber sent to the working face for the miners' use is not cut to the proper length and, as just mentioned, is not available for instant use.

#### CUTTING TIMBER IN MINE THE CAUSE OF MANY ACCIDENTS

The conditions just described have a tendency to make miners careless in respect to the timbering of their places, which we all know must be done promptly when needed and not put off for a more convenient time. I am not classifying every miner on the same level; but I honestly think the sending of timber into the mine, before it is cut to the right length, is the underlying cause of a great number of accidents.

It may be argued that it is the duty of the safety inspector to see that the miners keep their tools in good condition and cut and set timbers promptly in their places. This is no doubt true; but the delay in the work of loading when timbers must be cut is the miners' excuse for not setting his posts till he has finished loading his coal.

My thought recurs to a mine where the timbermen are each assigned to a certain section of the workings and charged with the duty of measuring the length of timber required in each place, in that particular section. A timberman notes his measurements in a book, together with the number of posts and cap-pieces on hand in each place, after which he proceeds to the timber yard, cuts what posts are needed and loads them into cars to be taken, by the driver, to where they are wanted.

It is needless to say that when each working place is thus supplied with props of the right length and cap-pieces, the miner has no excuse for not setting his timbers promptly, as required; and, as a result, the accident list in that mine is greatly reduced.

Poston, Ohio.

J. H. TAYLOR.



## Inquiries Of General Interest

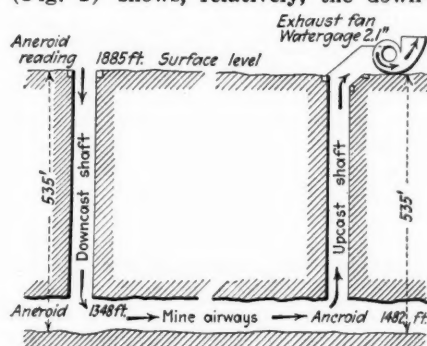
### Determining Hydrostatic Pressures in a Mine With the Aneroid

Altitude Aneroid Readings Converted Into Equivalent  
Inches of Mercury or Atmospheric Pressure (lb. per sq.in.)  
—Difference in Altitude Approximate Difference in Elevation

ONLY recently I came across the letter of an Oklahoma mining engineer, inquiring into the use of the aneroid for determining hydrostatic pressures in the mine. The inquiry appeared in *Coal Age*, June 16, p. 1084, and the reply of the editor drew attention to points that must be observed in taking such readings, but did not show how to calculate the hydrostatic pressure on the air from the readings taken.

Some time ago I had occasion to determine, if possible, the pressure on the air at different points in our mine, by the use of the aneroid. My technical knowledge of the subject will not permit me to go further than to present a few figures taken from my notebook, which I believe will be of interest in this connection.

The accompanying sketch or diagram (Fig. 1) shows, relatively, the down-



cast and upcast shaft, the position of the exhaust fan, depth of shafts, the surface line and the seam below, these being each practically level. On the diagram, also, I have indicated the aneroid readings taken at the surface and at the foot of each shaft. These readings were taken from the altitude scale of the aneroid and represent, more or less closely, the height in feet above sea-level or tidewater.

It will be observed that the difference of the readings taken at the surface and at the foot of the downcast shaft,  $1,885 - 1,348 = 537$  ft., checks the actual depth of the shaft within 2 ft. But the reading taken at the foot of the upcast shaft (1,482 ft.) would indicate a difference of  $1,482 - 1,348 = 134$  ft. between the elevations at the foot of these two shafts.

As previously stated, however, the seam is practically level and its elevation we understand is about sea level. Therefore, the difference in the two altitude readings taken in this level seam must represent the pressure, in feet of air column, due to the resistance met by the air current in passing from the foot of the downcast to the foot of the upcast shaft.

From tables giving the barometric height, for different elevations above sea level, I find that there is a difference of  $29.925 - 29.39 = 0.535$  in., for the first 500 ft. above tide. Then, to find the difference for 134 ft., I used the proportion

$$500 : 134 :: 0.535 : x = 0.143 \text{ in.}$$

Multiplying this by the specific gravity of mercury (13.6) gives the corresponding water-gage reading, as  $13.6 \times 0.143 = 1.94$  in. This does not include the resistances of the two shafts, but only represents the resistance of the mine airways.

Finally, for the purpose of checking the readings of the aneroid, I took a water-gage reading at the intake orifice of the fan and found it to be 2.1 in., which is slightly greater than the water gage estimated as due to the resistance of the mine airways. If there is a formula or method of calculating hydrostatic pressures, from aneroid readings, it would be of interest in this connection.

MINE ENGINEER.

W. Va.

We are glad this correspondent has again drawn attention to the inquiry regarding the use of the aneroid barometer for ascertaining mine pressures. As he states, the reply made in *Coal Age*, June 16, p. 1084, did not give the necessary calculations, as no specific case was mentioned.

Many engineers have used the aneroid to determine elevations and pressures underground, but generally with unsatisfactory results. In most cases, the difficulty has arisen from a lack of understanding of the instrument.

The use of the aneroid, in mines, is complicated by reason of the readings being taken at different elevations and being variously affected by the ventilating pressure due to the resistance of the airways.

In the present instance, the correspondent has taken the readings from the altitude scale of his instrument,

which was an error, as the altitude readings taken did not correspond to the actual elevations of the points above sea level.

As is well known, the density of the atmosphere decreases as the elevation above sea level increases. For this reason, 500 ft., on the altitude scale of an aneroid, corresponds to a less difference in pressure at the higher altitudes than at lower elevations.

The correspondent states that the seam of coal is practically at sea level, which makes the elevation at the surface about 535 ft. above tide. The readings observed from the altitude scale showed a difference of 537 ft., or 2 ft. greater than the measured depth of the shaft.

This result should have shown, at once, that something was wrong, as the difference in reading should have been much less than the depth of the shaft, taking into consideration the resistance that the shaft offers to the passage of the air current. This resistance acts to counterbalance and destroy the lesser effect of the weight of the air column in the shaft and decrease the difference of pressure.

As shown in Fig. 2, mining aneroids have two scales, the outer or altitude



FIG. 2. MINING ANEROID

scale being adjustable, which permits it to be shifted so that its graduation will correspond to any observed barometric reading.

The best results are obtained when the known elevation of the point of observation above tide on the altitude scale is shifted to correspond to the observed reading of the mercurial barometer, at the time of observation.

Referring now to Fig. 1, which is a diagrammatic representation of the points in question as prepared from the correspondent's sketch, the first step is to find the respective atmospheric pressures corresponding to the observed altitude readings at the surface and the bottom of each shaft.

For this purpose we assume a height or altitude  $h = 1,885$  ft. and an absolute temperature  $T = 460 + 60 = 520$  deg. F., in the following equation (see *Mine Gases & Ventilation*, Beard, p. 16):

$$\log p_h = 1.1672 - \frac{h}{122.68 T}$$

The pressure corresponding to an altitude reading of 1,885 ft., as found

from this equation, is  $p = 13.73$  lb. per sq.in. In like manner the pressure for the altitude reading 1,348 ft., taken at the bottom of the downcast shaft, is  $p = 14.00$  lb. per sq.in.; and that for the reading 1,482 ft., taken at the bottom of the upcast shaft, is 13.93 lb. per sq.in.

Now, subtracting the calculated pressure at the surface (13.73) from that at the bottom of the downcast shaft (14.00) gives for the difference of pressure  $14.00 - 13.73 = 0.27$  lb. per sq.in. More exactly, by the use of seven- or ten-place logarithms, this difference is 0.269 lb. per sq.in.

Since the elevation of the seam is said to be practically sea level, the normal atmospheric pressure is 14.696 lb. per sq.in. Subtracting from this the calculated difference of pressure between the top and the bottom of the shaft, gives for the normal pressure at the surface  $14.696 - 0.269 = 14.427$  lb. per sq.in.

Having thus found the respective normal pressures for the top and the bottom of the downcast shaft, we substitute these in the equation previously given and solve for  $h$ . But  $\log 14.696 = 1.16720$ ; and  $\log 14.427 = 1.15918$ , which substituted in the equation gives, for the estimated depth of the shaft,  $h = 511.6$  ft.

It is clear that the observed difference of pressures between the top and bottom of the shaft would have been greater but for the resistance of the shaft to the air current. In all aneroid work in mines, for the purpose of determining pressure on the air, it is necessary to know the elevations of the several points of observation, in order

to estimate the resistance of the shaft or airway.

For example, to determine the shaft resistance in this case, substitute the measured depth,  $h = 535$  ft., in the equation previously given, and find for the atmospheric pressure at the surface  $p = 14.415$  lb. per sq.in. Then, subtracting this from normal sea level pressure at the bottom of the shaft gives  $14.696 - 14.415 = 0.281$  as the difference of pressure due to the depth of the shaft.

The difference of pressure calculated from the observed reading was 0.269 lb. per sq.in. Therefore, the shaft resistance in this case is  $0.281 - 0.269 = 0.012$  lb. per sq.in., or 1.728 lb. per sq.ft., which corresponds to a water gage of  $1.728 \div 5.2 = 0.33$ .

Again, each of the readings taken at the foot of the downcast and upcast shafts, respectively, being practically sea-level readings, no allowance has to be made for difference in elevation. In this case, therefore, the resistance of the airways between these two points is  $14.00 - 13.93 = 0.07$  (exactly, 0.067) lb. per sq.in., or 9.648 lb. per sq.ft., corresponding to a water gage of  $9.648 \div 5.2 = 1.85$  in.

Finally, assuming the resistance of the two shafts is  $2 \times 0.33 = 0.66$  in. water gage, the total water gage reading in the fan drift would be  $1.85 + 0.66 = 2.51$  in. It is hardly possible to obtain a correct water-gage reading at the intake orifice of a fan, which was said to be 2.1 in. The water-gage reading should always be taken on the air drift, at a sufficient distance from the ventilator to afford a steady uniform reading.

bearing, which gives  $180 + 15 = 195$  deg. Then, the angle between the two bearings is  $195 - 87\frac{1}{2} = 107\frac{1}{2}$  deg.

**QUESTION**—Is it proof of good ventilation, in a gaseous mine, when a very rapid current of air is passing through a small airway? Give reasons.

**ANSWER**—The rapid air current may furnish a good quantity of air, which if properly distributed in the several districts of the mine would give good ventilation at the working face, where the current velocity must be low, say not exceeding 4 or 5 ft. per second, in order to avoid the danger of the flame being blown through the gauze of the safety lamps. But it will be necessary to keep all safety lamps out of the main air-course where the air is traveling at such a high velocity.

However, the fact that a rapid current of air is passing in the main airway is not of itself proof that the mine is well ventilated, particularly if the sectional area of the airway is very small. Good ventilation will depend on the velocity of the air at the working face and the gaseous condition of the mine atmosphere.

**QUESTION**—How many cubic yards of earth have been excavated from a shaft 37 ft. long, 12 ft. wide and 750 ft. deep?

**ANSWER**—The sectional area of this shaft is  $12 \times 37 = 444$  sq.ft., or  $444 \div 9 = 49\frac{1}{3}$  sq.yd. The depth of the shaft being  $750 \div 3 = 250$  yd. the number of yards of earth removed is  $49\frac{1}{3} \times 250 = 12,333\frac{1}{3}$  cu.yd.

**QUESTION**—What conditions would guide you in determining the widths of entries and rooms?

**ANSWER**—The width of entries in mines is determined by considering, first, the physical conditions, such as the nature of the roof, floor, and coal, depth of cover and thickness of seam; and, second, the practical conditions relating to the kind of haulage employed, size and capacity of mine cars and necessary clearance. Entries leading toward old abandoned works should not be more than 8 ft. wide.

The width of rooms is determined by the physical conditions, such as nature of the roof, floor, and coal, thickness of seam, presence of gas or water in the strata, fault lines or slips in the roof; and, practically, by the method of working employed, manner of cutting the coal and length of time the rooms must be kept open.

**QUESTION**—A slope dips 1 ft in 8 ft., for a distance of 504 ft., measured on the slope. What is the difference in elevation between the mouth of the slope and its face; and what is the horizontal distance between these points?

**ANSWER**—In this case, the inclination being 1 in 8, measured on the slope, the total dip or the vertical height of the mouth of the slope above its face is  $504 \div 8 = 63$  ft.

Since the slope, the vertical height and the horizontal distance form a right triangle, the horizontal length of the slope is  $\sqrt{504^2 - 63^2} = 500$  ft.

## Examination Questions Answered

### Illinois Mine Managers' Examination, Springfield, May 2, 3, 1921

(Selected Questions)

**QUESTION**—With a 38-hp. fan we are producing 100,000 cu.ft. of air per minute; how many cubic feet will we get from a 30-hp. fan, in the same airway?

**ANSWER**—Assuming the same efficiency for each fan and no change in the circulation of air in the mine, the quantity of air passing will vary with the cube root of the power on the air. In other words, the quantity ratio is equal to the cube root of the power ratio, which gives in this case

$$\frac{Q}{100,000} = \sqrt[3]{\frac{30}{38}} = \sqrt[3]{0.78948} = 0.92422$$

The quantity of air produced is then  $Q = 100,000 \times 0.92422 = 92,422$  cu. ft. per min.

**QUESTION**—(a) How many degrees are there in a circle, and (b) what angle is included between the bearings  $N87\frac{1}{2}^\circ E$  and  $S15^\circ W$ ?

**ANSWER**—(a) There are 360 deg. in a full circle.

(b) The angle included between the two bearings given is found by subtracting the azimuth of the first bearing from that of the second. The azimuth of a bearing is the angle measured from the north point of the meridian around to the right. Thus the azimuth of the first bearing is equal to the angle of the bearing, that being in the northeast quadrant.

The angle of the second bearing lying in the southwest quadrant is found by adding 180 deg. to the angle of



# Engineers from Country Over Visit Anthracite Region

Wilkes-Barre Meeting of A. I. M. E. Attended by About Five Hundred Persons  
—Guests Visit Wyoming and Lehigh Regions—Inspect Marvine Breaker,  
Hauto Electric Plant and Large Strippings—Much Progress Outlined in Papers

BY R. DAWSON HALL\*

**W**ITH W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., in the chair, the American Institute of Mining and Metallurgical Engineers opened Sept. 12 its 124th meeting, at which it celebrated its fiftieth year of existence. On May 16, 1871, the Institute was founded in Wilkes-Barre, and this year in memory of that fact it held its summer meeting in that town.

The first paper presented was one by H. D. Kynor, assistant to the general manager of the Hudson Coal Co. The presentation was accompanied by large line drawings and the paper was discussed by Cadwallader Evans, Sidney J. Jennings, W. J. Richards and George S. Rice. Speaking of the marked decline in mechanically-mined anthracite—1,508,634 tons being so produced in 1920 and 2,021,161 tons in 1918—Mr. Kynor said the falling off was largely in the production of the Pennsylvania Coal Co., which in the year 1920 had been faced with many labor troubles which resulted in lowered production. It should be noted, however, that the Delaware, Lackawanna & Western R. R. Coal Department also reduced its tonnage in 1920 to one-half that of 1918. The Hudson Coal Co. and the Scranton Coal Co., to say nothing of the Temple Coal Co., made large gains.

## ASHLEY PLANES STILL BETTER THAN RAILROAD

The paper by C. H. Stein on "The Ashley Planes for Handling Freight Traffic" was presented in brief by Secretary F. F. Sharpless. Douglas Bunting spoke favorably of the planes and declared that while a back track was in existence and coal could be, and had been, hauled by that connection, it had not been found possible to operate loaded cars on it profitably. The track was used solely for the return of empty cars. Sidney J. Jennings said that in South Africa planes had been abandoned as more expensive to operate than heavy adverse grades, as more skilled workmen had to be employed. Edwin Ludlow declared that when a Western manager took charge of the Philadelphia & Reading R. R. some time ago he put the Mahanoy plane out of commission, alleging that it was not a profitable way of conducting railroading. After a month's experience he decided that the plane was more profitable to operate than the ordinary road over which he was attempting to raise the cars.

Graham Bright declared that the planes expressed up-to-date practice of twenty years ago but today it would seem that they should be electrified. There were three separate power houses to be maintained and an extremely bad load factor. It would be better to use electricity. A common generating station would greatly reduce costs or, better yet, power could be purchased. He could not see how hoists of 1,200 hp. could handle the load at thirty miles an hour. It appeared to him that a 5,000- or 7,000-hp. hoist would be required.

Donald Markle's paper on "Anthracite" followed, and

William Griffith questioned if anthracite and chestnut anthracite were really comparable, unless the ash content of the anthracite were known. Mr. Markle said that anthracite had 16 per cent of ash and anthracite 18 per cent and so the coal chosen for comparison with anthracite was not unduly ashy; in fact, it was a coal which might be expected to give good results.

## CARBOCOAL CANNOT BE MADE OUT OF ANTHRACITE

E. M. Chance asked in what way anthracite differed from carbocoal. Charles Dorrance said that while there might be some resemblances in the two products, carbocoal could not be made out of anthracite and that the processes and products were essentially different. In reply to E. W. Parker, the author said that he had not coked anthracite and coal-tar pitch in non-recovery ovens and therefore could not say with certainty if the coking process really would be self-sustaining when the carbonizing was done in such ovens. Asked by George H. Ashley if anthracite would take anthracite out of the steam market, Charles Dorrance declared that anthracite was superior to any briquet ever manufactured and that 500 or 600 tons of the product have been made and tested. It remained however, to be seen if anthracite could be produced at a price that would enable it to compete with rival fuels. In particular the developers of the process do not know if it will generate enough to continue the carbonization of the pitch.

William Griffith's fear was of a shortage of coal tar and Edwin Ludlow wanted to know if a low-grade oil of asphaltic base could be used in place of that substance. This material, Mr. Markle declared, had been tried but without favorable result. In reply to George S. Rice, Mr. Markle said that slush and coal tar could be carbonized into anthracite without grinding but as



R. A. QUIN  
General Manager, Susquehanna Collieries Co.,  
whose hearty co-operation assisted in making  
the meeting a success.

\*Editor, Coal Age.

the particles of slush passed through the process without losing their identity the coarse particles were apt to rub off in storage and give the purchaser much trouble with the powder thus liberated from the product.

John Griffen then read his paper "Slush Problem in Anthracite Preparation" and Mr. Blood of New York in a written paper discussed the possibility of using fine anthracite for the generation of power for the super-power project. He said that in the anthracite region power could be generated at 5.7 mills per kilowatt-hour whereas at New York the cost is 7.4 mills and in Philadelphia 7.3 mills. The power from the anthracite region could be transmitted to the seaboard for 6.5 mills.

#### ANTHRACITE FIELD PRODUCES 15 PER CENT OF U. S. COAL

In the evening of Monday, with C. F. Huber in the chair, E. W. Parker delivered his lecture on the anthracite region, with the aid of lantern slides, explaining that 15 per cent of the present output of coal in the United States comes from the anthracite field, occupying less than 500 square miles and a little more than one-tenth of 1 per cent of the whole coal area of the United States, which aggregates about 400,000 square miles. Speaking about the antiquity of the anthracite industry R. A. Quin informed the meeting that the firm of A. B. Cochran mined and shipped coal from Schuylkill County as early as 1786. The figures usually given for the early production of the anthracite field are extremely misleading; there were so many sources of that early production and so many of them were earlier than the first statistically-recorded output that it is somewhat misleading to say with Mr. Parker that "as an industry anthracite is considered to have begun in 1820, when the Lehigh Navigation & Coal Co. (now the Lehigh Coal & Navigation Co.) shipped 365 tons, one ton for each day of a normal 365-day year, down the Lehigh and Delaware rivers to Philadelphia."

The trade was established, as Mr. Parker showed in his paper, during or before the Revolutionary War, and his decision to regard its commencement in 1820 is somewhat arbitrary and was disputed by William Griffith and later by Mr. Quin.

Following the article of E. W. Parker came that by H. N. Eavenson on the "Lynch Plant of the United States Coal & Coke Co." He stated that the cover over the mine was 1,500 ft. in the deepest part in the workings on the right bank of Looney Creek and 1,000 ft. on the left bank and that before the mine was completed 2,200 to 2,400 ft. of overburden would be reached in places. In reply to E. V. D'Invilliers' query as regards the summer water supply he said that there had been a considerable shortage and that the company was arranging a reservoir inside the mines. A drillhole about 70 ft. deep or thereabout was being drilled down to the coal in the bottom of Gap Branch. The water was to be run into rooms in the flood periods and held there by substantial dams so as to be available during dry periods.

#### LYNCH PLANT TO EXTRACT 250,000,000 TONS OF COAL

In reply to Mr. Evans, who seemed to doubt the advantage of such a large expenditure as has been made on this plant, Mr. Eavenson declared that it was intended to extract 250,000,000 tons of coal from that area, which at 2,500,000 tons a year or upward would last 70 to 100 years. There were four seams above water level and one below. He added that one large central plant surely was more economical than several small plants, each requiring its quota of surface men.

Graham Bright commended the dimensions of the cars which have the wheel base as long as the gage is wide. He questioned, however, why the cars should be so low. Mr. Eavenson declared that the seam being worked often fell in "rolls" well below the regular height and made a low car desirable, and he stated that one reason for the use of these low cars was so as to be prepared to meet conditions in a seam located 20 ft. below the one now being worked. This seam is 3 ft. 6 in. thick.

George S. Rice urged that reliance on topping cars with coal to obtain car capacity should be avoided as it results in an excessive quantity of dust being deposited in the roadways and in consequent dust explosions. Mr. Eavenson said most of the spillage along roadways came not from the overbuilding of cars but from leaky and loose endgates. As the Lynch car had solid ends this scattering of coal was avoided.

In reply to C. E. Holder, Mr. Eavenson said an allowance of 50 gallons per day per person was sufficient to supply the employees with water. An allowance had been made of two rooms per employee. There were no tubs in the wash house, as the sanitary advisers of the Steel Corporation would have none of them, but there were seventy-one showers.

To C. T. Starr, who asked what the tonnage per man averaged, Mr. Eavenson said that the production was four tons per man when all employees—even the store men—were considered.

The morning following, Tuesday, Sept. 13, a trip was made in automobiles through the Wyoming Valley to Scranton along the course already described in *Coal Age*. This trip was broken by a visit to the Marvine Colliery at Plymouth, which was described in D. C. Ashmead's paper, but with all the superlatives left out. It is truly the latest word in breaker construction. Its cleanly factory-like appearance and solid fireproof construction make it look like a big Western copper mill. As its contents are not of a combustible character the building is doubtless as fireproof as it appears, which is more than can be said even of up-to-date factories.

At this plant were shown graphic charts, one for each working bed, drawn on a scale of 100 ft. to the inch. These showed by buttons the places being worked and the numbers of the men to whom they are apportioned, day-shift and night-shift men being denominated by buttons of different colors. Mules and locomotives also are represented—by pins. These working maps are brought to date once a week.

#### MAKE FIVE-YEAR FORECAST OF DEVELOPMENT

Charts also show the fatalities from different causes by months. The forecast atlas contains maps and data showing a five-year forecast of development and projection. A glass-plate model shows the relative location of the workings in the various beds and the surface improvements above them. A large working model of the Loree breaker also was exhibited.

The visitors took an elevator to the top of the breaker and, passing down back and forth across the various floors, closely inspected the machinery, including the Deister-Overstrom tables and the Dorr classifiers. This installation is no longer experimental and certain it is that an air of permanence is as apparent here as elsewhere, and the results attained in the operation justify the confidence which the management reposes in its efficiency and expediency. Like all the newer wet breakers this structure is absolutely clean. There is no dust of any sort and as the water is well controlled no stray sprays make progress through the breaker unpleasant.

The trip ended at the International Correspondence Schools, where a generous lunch was served and the schools inspected. Two sessions were held, one on coal mining and the other on Americanization. At the first Douglas Bunting presented his paper on "Mine Fires." George S. Rice pointed out that the results obtained in sampling the gases in the sealed areas were at variance with those obtained from similar areas in bituminous mines.

In soft-coal mines, after sealing the air rapidly loses its free oxygen, the percentage of which may fall to zero. In the cases described by Mr. Bunting the oxygen percentage fell and then rose again. He said he would like to know the reason for this rise if the sealing was really tight. He wanted to know what indication led the officials to believe the fire was out. In bituminous mines the dropping of the carbon monoxide to zero was not found to be evidence that the fire was extinguished.

Mr. Bunting stated in reply that the company officials, while in doubt as to the results of their efforts, ventured



### Beaver Meadow Breaker

A Lehigh Valley Coal Co. operation, located near Hazleton, Pa. The headframe is 225 ft. high, being one of the highest in the anthracite field.



in each case to proceed on the supposition that the fire was out. It was impossible to ascertain whether it was extinguished without entering the fire area, and fortunately in each instance the assumption proved entirely correct. The absence of carbon monoxide was regarded as an indication but not one on which any positive reliance could be placed. He could not explain why the oxygen content increased, for the seals were tight.

Mr. Rice questioned whether the fire was in the coal or in timbers, in that it was so easily extinguished, and Mr. Bunting replied that in each case there must be coal consumed. In the Nottingham fire little timber was burned but in the South Wilkes-Barre conflagration timber took a larger part. In both cases, however, the fire fed on coal as well as on wood. Breathing apparatus was not used in the sealing of the intake but was used when closing up the return.

H. H. Otto read a paper by J. D. Warriner on the peculiar conditions in the Panther Creek Valley, where the heavy slopes made extinction unusually difficult and where the fires cost sums of money reaching up to \$180,000. Of course, the great Summit Hill fire had cost many times that sum. E. M. Chance said that the presence of carbon monoxide in itself indicates fire except where it arises from the imperfect combustion of explosives.

#### BRISK FIRES RAPIDLY GENERATE CARBON MONOXIDE

Absence of carbon monoxide, however, does not show that the fire is out, but only that it is not brisk. Carbon monoxide is not readily formed at low temperatures. With brisk fires it is rapidly generated. Finally the carbon-dioxide percentage ceases to increase as the fire dies down. Then, at last, it may be said that combustion has ceased, but still the fire may not be out. The coal may be so hot that as soon as air reaches it it will blaze up again.

Mr. Warriner said that some of these mine fires occurred in places that had not been worked for some years, and there was a disposition to ascribe them to spontaneous combustion, gas ignition by sparks from falling rock and like mysterious causes. Whatever their origin they were stubborn and expensive to subdue.

Edwin Ludlow discussed the fire on Summit Hill, which is still burning and has been active since 1759. It is now cut off, however. It was thought that the cut-off was ineffectual, heated areas being found above the coal beyond the isolated section. But by boring the roof above the coal beyond the cut-off and by flushing it with culm, giving it large quantities of water, the crevices were successfully closed and the fire stayed.

The Midlothian mine of the Richmond coal field of Virginia had, according to H. M. Chance, a fire at about the 300-ft. level. The measure dipped at an angle of 30 to 35 deg. There was no fire below the 300-ft. level. It was decided to flood the mine, and as the water supply was insufficient it took two months to seal off the fire with

water. There were unfortunately no holes to the crop, and though the water rose to within 20 ft. of the curbing of the shaft, it could not fill the 300-ft. level, for as soon as the rising water sealed off the area it ceased to be able to drive the air out and consequently could not rise as far as the fire, the compressed air preventing the water from penetrating all portions of the workings. Had boreholes been made to let the air out, the water possibly would have risen and done its work. However, after an eighteen months' wait the officials of the company pumped out the water and entered the mine, to find it still far from extinguished.

#### PUT OUT BRITISH MINE FIRES BEFORE THEY START

Lieutenant Colonel J. A. C. Ritson, who is representing the British Government in this country, having been appointed to attend the International First-Aid and Mine-Rescue competition at St. Louis, spoke on British mine fires. He said that in South Yorkshire all the mines were dry, gaseous and from 2,400 to 3,300 ft. deep. There are fires at these mines at all times. The method of fighting them is, to use an Irish bull, to put them out before they start.

Attempts have been made to ascertain the prospect of fires by analyses of mine gases, but apparently the nose is the best guide. The gob stink is more readily determined than a change in the composition of the air. When the gob stink is noted the men are withdrawn and rock dust is spread over the area, which is then built off with packwalls. These in turn are coated with loose sand which is driven into the cracks. Loose dirt stoppings or brick walls are erected, and then sand is piled outside to prevent air seeping through any crack that might have developed. The air is regulated on the return so as to reduce to the correct quantity the ventilation current in the area being scaled. The air is shut off on the return last, but the work of blocking the return airway is not left entirely till after the intake is shut off. The bulk of this work is done before the intake is entirely closed, and the last work on the return is done after the last work on the intake.

In non-gaseous mines, which usually are damp, the fire, if in the middle of a pillar, usually is dug out and so removed. Some fire areas in Scotland have been unsealed after forty years and were found still burning. It is believed that they received air from the surface.

Mr. Ritson said that the old open-flame lamp must soon be done away with in Great Britain, as it has been the cause of only too many mine fires. R. V. Norris called attention to the fact that the National Colliery fire was extinguished by making an extremely deep and wide ditch around the shaft. The expense was enormous but was well justified by the outcome. George S. Rice mentioned the success at Butte achieved in the shutting off burning areas by the use of brattice cloth, chicken wire and the cement gun.

# The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

**T**HE general situation in business has changed little, according to the September bulletin of business conditions issued by the National City Bank of New York.

"The textile industries as a group," the bulletin states, "are an exception to the general situation. This is particularly true in cotton goods, which have blossomed out into something resembling a real boom. The mills are well sold up for the immediate future and in some lines until next spring, while prices have recovered on some goods up to 20 per cent. Foreign orders have been received in sufficient quantities to help the revival."

Under the caption "the situation waits," the bulletin continues, in part:

"It is not difficult to see what is the matter with industry in the United States and over the world. The situation is practically the same everywhere. The demoralization and poverty of Europe, resulting from the war, is of course a factor in it, but the chief cause even in Europe is not the losses of the war, but the unbalanced state of industry as between the producers of primary products on the one hand and the producers of manufactured products and the groups engaged in trading and transportation on the other hand.

"There seems to be nothing to do but allow the economic forces to work things out in their own relentless way. The workers in each industry have the privilege of saying that they will not come down until everybody else does, and perhaps not then. Nobody has authority to say who shall come down first, or that anybody shall come down. They will have to settle it among themselves.

"Notwithstanding the many discouraging factors in the situation, reports from over the country indicate that pessimism is less intense than earlier in the year. The crop has been made upon very low expenditures. The farmer has gone resolutely at the task of reducing production costs, and in so doing has set an example to all the industries.

"The way of real progress is not by the efforts of each group or class to get the better of others by methods which embarrass and curtail the production of wealth, but by intelligent efforts to increase production."

## Freight Loadings Still Increasing

An increase of 892 in the number of cars loaded with revenue freight during the week ended Sept. 3, compared with the previous week, is shown by reports received by the Car Service Division of the American Railway Association. The total for the week was 830,601 cars. This is the largest week's loading since Dec. 11, 1920, and represents the fifth consecutive week of increase. As compared with the corresponding week of 1920 it shows a loss of 131,032 cars.

## Sears-Roebuck Sales Gaining

Officials of Sears-Roebuck Co., Chicago, say business is improved,

according to a report issued Sept. 14. Sales so far this month are only 20 per cent below September sales last year, with good indications from present daily reports that the percentage of decreases will be materially reduced during the remainder of September.

## Repairing Cars for Erie R.R.

The Greenville Steel Car Co., the *Iron Age* reports, has secured new business that will keep the plant in steady operation for the next three months at practically full capacity. President F. L. Fay closed in New York recently a contract for repairing or rebuilding 500 steel cars for the Erie R.R.

## More Steel Furnaces Start Up

Recent improvement in the iron and steel industry has been maintained and there are further signs of a moderate broadening in demand. The current month is more than holding its own compared with August, says *The Iron Trade Review*, in its weekly summary as of Sept. 15, and the volume of orders in some lines was the best of the year. Production was described as undergoing a slow but sustained increase, best illustrated by the blowing in of additional blast furnaces. No less than half a dozen furnaces have resumed since the first of this month, following an increase of more than 41 per cent in August. Structural steel orders made a favorable showing during the week, contracts placed totaling 15,000 tons. Railroad buying is again increasing.

## Buffalo Has Less Unemployment

Survey of the unemployment situation in Buffalo by officials of the New York State Employment Department show a material increase in the number of workers who have taken jobs in August and the first two weeks of September. The investigation shows about 37,000 workers are now unemployed—a decrease of 2,600 from June.

## Fewer Idle Now Than in 1914

Those who are disturbed over the 5,735,000 unemployed of today overlook that in 1914 there were 7,000,000 out of work, a larger percentage of whom were men and actual breadwinners than in the present unemployed, Secretary of Labor Davis said recently in a statement. Declaring that the country had just passed through a period when every effort was made to induce women and others who had not worked for wages or salaries before to "work and save starving Europe," Mr. Davis said present unemployment figures included great numbers of persons upon whose earnings no one actually was dependent.

## Four Tin Plate Mills Start Work

Four additional tin plate mills were put on at the Laughlin works at Martins Ferry, Ohio, of the American Sheet & Tin Plate Co. on Sept. 1, according to the *Iron Age*. Of the twenty-three mills at this plant sixteen now are under power.

## 2,000 Auto Parts Makers Resume

The Willys-Morrow Co., Elmira, N. Y., which manufactures parts for the Willys-Overland automobiles, issued a call Sept. 9 for 2,000 former employees to return to work. The plant had been closed for several weeks.



# Resuscitation of Business and the Railroads Awaits Reasonable Period of Stable Price Conditions\*

Expeditious Tracing of Coal and Other Freight a Notable Feature of Carriers' Service—Reconsignment Troubles Lightened—Handling of Claims Improves—N. Y. Central Campaign Helps to Move Winter Coal

BY G. N. SNIDER †

SINCE that which we railroads produce cannot be stored in dull times to be sold in active times, we are a "service" rather than an "industry," and "service" should be—as it generally is—our motto and our creed. The service we believe in is that which comes from an intelligent appreciation of the needs of our patrons, balanced by and tested against those economic laws and forces which govern all successful business enterprises.

Contrary to a belief which sometimes seems amazingly prevalent, and which seems to have grown like a mushroom during the war, the railroads have no inexhaustible reservoir of riches upon which they can draw without regard to the consequences, but are dependent for their continued existence upon the profits they are able to make, and must oppose the theories of such people in view of the disagreeable facts the railroads must face.

With general resumption in business and a general reduction in labor and material costs, which are bound to come, the railroads would eventually make so much money if the present rates were continued that an orderly reduction in rates would be proper. Many unfair adjustments of rates are being remedied, largely by reductions, but the struggle between industries and sections for general reductions that will give them a preference over other industries and sections in the return to prosperity will soon have everybody in a turmoil.

## DIFFICULT FOR RAILROADS TO CUT MAINTENANCE COST

The railroads have better reason than any others for wishing a resumption of business. Their constant expense of maintenance is tremendous, whether or not their traffic is heavy, and they cannot reduce it proportionately to their traffic except temporarily. Coal consumers who think that possibly there will be a reduction in rates on coal in the autumn will certainly be averse to storing their coal in the spring, and a retail dealer figuring along the same lines will surely hesitate and defer taking in in the spring any more coal than he can immediately deliver.

In my judgment the proper thing to do is for the railroads, or the Interstate Commerce Commission—there seems some conflict as to where the decision lies—to say very positively either that the rates will not be changed for the next seven months or a year and that if they are then to be changed they will be reduced by approximately so much on or about such and such a time. Business is adaptable. All it needs for profitable volume is some assurance of stable cost conditions for a reasonable time.

In giving service to the retailers the most recent constructive development on some of the railroads—including our own—has been the devising of a plan to expedite the tracing of coal and other freight.

You all probably know how car records were made up in the past. On a large system it was frequently seventy-two hours or more from the time of the movement before a record of it appeared on the record books, so when any tracing was necessary for current shipments the record books were found to be of little service and records could be obtained only by a great deal of telephoning and telegraphing to the junction or yards.

Then some budding genius, whose name unfortunately has not been preserved for the Railroad Hall of Fame,

devised a plan so simple as to be wonderful. He took a large sheet of paper and divided it into 100 squares, numbering those squares consecutively from 0 to 99, and at the top of the sheet provided numerous symbol letters and spaces to record the movements of trains. Now the conductor's train sheet is transcribed at the yard on this large report, which is called a passing report. On symbol line "A," for instance, the train reference and movement is shown. Then all the cars in that train are marked in the appropriate squares according to the last two numerals of the car number, and opposite the car number in its appropriate square is shown the train symbol number from the top of the sheet. About 500 cars are shown on each sheet. These sheets are manifolded by a hektograph process and copies sent to the various general traffic officers, division traffic officers and the more important off-line traffic agencies and are usually there the next morning after train movement has transpired.

Now, if a retailer or anybody else wants to trace a car that is currently in transit he calls up the nearest traffic office, that office looks on the appropriate passing report, has only to look at four or five numbers in the square bearing the last two numerals of the car to be traced and, in nine cases out of ten, a record of that car can be given within two minutes from the time the retailer's request is received. It is a tremendous step in advance.

The other burdens of the retailers, so far as the railroads are concerned, are largely claims and reconsigning rules. The stringent coal-reconsigning rules which were required of the railroads by the Interstate Commerce Commission last September are no longer with us—normalcy has been restored.

## DEFECTIVE EQUIPMENT A PROLIFIC SOURCE OF LOSS

The handling of claims is now progressing much more rapidly than last year, for then the tremendous volume of work made it impracticable to expeditiously investigate and settle coal claims. We still have some old ones left but are settling them fast. We are interested, constructively, in the prevention of coal losses. Aside from pilferage, the chief cause of loss is defective equipment.

The war demands on open-top equipment were so great and it was so impossible to meet the country's demand for transportation and at the same time keep cars fully repaired while the business and financial situation precluded our buying new cars, that many of our present cars are in poor shape. However, as business improves and we have more money to spend we will be rapidly putting these cars in shape so that loss will again be at a minimum.

For many years the bill-of-lading rule as to amount of railroad's liability for loss in transit was expressed as the invoice value of the commodity at the place and time of shipment. That rule worked with substantial fairness during the years when we had no violent fluctuations in business. Now, because of a Supreme Court decision, railroad liability is for the fair market value as of the time shipment would ordinarily have reached destination, less, of course, transportation and other charges which could not be collected and were not assumed on the portion of the shipment that had been lost. This was hailed as a remarkable victory by the shipping interests while prices were rising, but has caused a great deal of grief since prices began to fall, for they have fallen faster than they rose.

The railroad in relation to the retail coal dealer should continue to supplement the efforts of the retailer to have the consumers take in their winter's coal in the spring and

\*Abstract of address before convention of New York State Retail Coal Merchants' Association, Richfield Springs, N. Y., Sept. 8, 1921.

†Coal traffic manager, New York Central lines.

early summer. We have preached this in season and out of season along our lines for many years and have just recently promulgated the advertisement which you have all seen, called "Coal For The Winter." We most sincerely hope that advertising of this kind, given the wide publicity that this advertisement has received, will be a helpful factor in securing timely storage of coal, for we know it will relieve the consumer of distress and anxiety, will help the retailer and producer in the matter of their costs by evening up their distribution, will keep mine labor better satisfied because of evenness of working time and will help the railroads by increasing their summer load and lessening their winter load.

In the course of their 1912 investigation of all practices, etc., concerning anthracite coal the Interstate Commerce Commission, without any complaint before it, so far as I am aware, in 1916 ordered the reduction of one-line rates to the larger stations in New York running from Albany on the east to Rochester on the west. During the war and the coal shortage since, these differences in rates have not had a great deal of effect, but with the coming of normal business conditions they have worked a great advantage in favor of the communities and dealers having low rates and to the disadvantage of the communities and dealers having higher rates.

The railroad men, producers and retailers worked out a plan of advancing the low and reducing the high rates so as to restore substantial parity of rates between dealers, producers, communities and railroads that existed so many years prior to 1916 without complaint, and, having published the tariffs, submitted them to the Interstate Commerce Commission. The tariffs were first suspended by the Interstate Commerce Commission, which entered upon a hearing as to the reasonableness of the plan proposed, and at the hearing a great number of witnesses appeared in favor of the adjustment while the opposition to it was entirely professional in nature. Nevertheless the commission has just decided that although an equalization is desirable, the method proposed cannot be permitted to go into effect, satisfactory though it is to the railroads, to the producers and to the coal dealers, who are the three interests who have their money in the proposition. They have given us no idea what sort of an adjustment will be approved by them, but leave us to find some other method.

Conditions in the coal trade and with the railroads are not of the brightest but I feel confident that hard work, straight thinking and a cool-headed appreciation by the public of what these problems really are will in the end bring us to the top of the hill and the fair land of prosperity "flowing with milk and honey."

### Cost of Mining Anthracite Totals \$6.953 Per Gross Ton Loaded on Cars

**C**OST of mining anthracite during the months of January, February and March, 1921, has been compiled by the Anthracite Coal Operators' Association. These figures represent eighteen collieries producing approximately five and one-half millions of tons of coal annually and embracing operations located in the upper and lower mining fields, and thereby giving a fair example of the individual operator's expenditures. It was found that the total cost loaded on cars at the mines during these three months was \$6.953 per gross ton on a production of 1,113,627 tons of all sizes of coal, of which 67.77 per cent was chestnut and larger, and the balance, 32.23 per cent, was pea, buckwheat, rice and barley.

Broken, egg, stove and chestnut total 67.77 per cent of production; pea coal, 8.83 per cent, and buckwheat and smaller, 23.40 per cent. The realization on broken, egg, stove and chestnut averaged \$8.821 per ton, the realization on pea coal was \$6.377, while the average realization of buckwheat, rice, barley, birdseye and culm was \$3.366. On the total production of 1,113,627 tons the realization was \$7.329. The difference between the realization and the total mining cost was 37.6c., or an amount obviously insufficient to pay selling expense, interest and Federal taxes and leave any profit whatever.

If the smaller sizes had been sold at the prices quoted

### COST AND TONNAGE OF FRESH MINED COAL FOR THREE MONTHS ENDED MARCH 31, 1921

Number companies reporting.....	7
Number collieries reporting.....	18
Tonnage.....	1,113,627
	Cost per Ton
Labor.....	\$4.937
Supplies.....	.991
Royalty—Current and advanced.....	.184
Depletion on coal land.....	.074
Amortization of cost of leasehold.....	.011
Depreciation.....	.284
Suspended cost of stripping.....	
Contract stripping and loading.....	.132
Taxes—other than income and excess profits.....	.038
Insurance—general.....	.097
Insurance—liability or workmen's compensation.....	.205
Office salaries, legal expenses and miscellaneous.....	
Total mining cost.....	\$6.953

### PERCENTAGE OF SIZES AND REALIZATION ON COMMERCIAL TONNAGE

	Per Cent of Sizes	Realization per Ton
Broken.....	10.71	\$9.174
Egg.....	12.79	8.648
Stove.....	17.73	8.829
Chestnut.....	26.54	8.757
Pea.....	8.83	6.377
Buckwheat.....	13.53	4.052
Rice.....	5.66	2.860
Barley.....	4.15	1.857
Birdseye or boiler.....	0.02	1.068
Culm.....	0.04	.640
Total.....		\$7.329

under date of Aug. 20, 1921, which were as follows: pea, \$4.50 to \$6; buckwheat, \$2.75 to \$3.50; rice, \$1.75 to \$2.50, and barley, \$1 to \$1.25, it would have made it necessary for the broken, egg, stove and chestnut to be marketed at \$9.36 per ton, using the low price quoted above, and at \$8.48 per ton on the basis of the higher price, in order to cover *merely the cost of production*. Out of whatever margin there may be between the figure of \$9.36 or \$8.48 (quoted above) and the actual selling price there must be provided (according to the report of the Federal Trade Commission, part 2, page 20):

"Reserves for uninsurable hazards, such as mine fires, floods, cave-ins, squeezes, strikes or other similar causes contributing to destruction of property and idleness at the mines (especially as revealed in greater overhead per ton by reason of lessened output); increased risk in the recovering of the capital involved in extra cost of development work under a normal régime of prices of coal; selling expense, where a selling organization, other than the mine office force, is maintained in order to market the product; interest on the investment, including borrowed capital; allowance for income and excess profits taxes; gross or net profit on the investment."

The Federal Trade Commission further explains "margin" as follows:

"The difference between the sales realization per ton and the f.o.b. mine cost per ton is the 'margin.' This 'margin' must not be confused with what is often called *profit*. *Selling expense, interest, income and excess profits taxes, as well as other items, must be deducted from it before the net profit available for dividends or surplus from the operation can be determined.*"

Whatever remains after these charges have been applied against the *margin* is the *profit* available for distribution to stockholders or owners of the property. The cost figures quoted are not theoretical figures but are those actually arrived at under the accounting system of the Federal Trade Commission, the U. S. Fuel Administration and the Treasury Department of the United States for the purpose of arriving at income and excess profits taxes, so that they are not open to question. These collieries are all considered to be well-operated and well-managed mining properties.

The U. S. Fuel Administration, after a thorough investigation, stated that there is for each ton of annual production an investment of from \$7.50 to \$8. It would be difficult to persuade investors to put money into an industry where their prospective distribution and dividends were less than 10 per cent, owing to the hazards and risks of the business and because money in many much safer investments can earn 8 per cent today.

On this basis the "margin" above referred to should be



sufficient to cover all the charges to be paid out of it as referred to in the Federal Trade Commission's explanation and leave the operator a reasonable *net profit*.

The U. S. Fuel Administration allowed brokers and commission men 20c. per ton for selling anthracite in the East and 30c. per ton in the West, an average of 25c. per ton. Assuming that half of the investment in anthracite properties is borrowed money, interest charges would amount to approximately 24c. Improvements would add another 18c., or a total of 67c. to come out of "margin." To this total of 67c. there must be added an allowance for income or excess-profits taxes and for reserves for uninsurable hazards. If any balance then remains it is *net profit*.

It must be borne in mind that anthracite sizes smaller than chestnut are sold at less than cost of production. The entire profit, therefore, must be obtained from the chestnut and larger sizes, the selling prices of which would have to be considerably higher than the figures which have been quoted as being necessary to cover merely the *cost of production*.

### August Coal Receipts at Duluth-Superior Dropped Below Last Year's Rate

COMPARATIVE receipts of coal by docks at Duluth-Superior for August and for the same period last year were as follows, as compiled by the Tomlinson company, Duluth vessel agents:

	1920		1921	
	Anthracite	Bituminous	Anthracite	Bituminous
Northwestern .....	64,600	152,000	100,547	178,741
Berwind .....		115,100		89,966
Pittsburgh .....	19,600	179,900	37,600	74,000
Carnegie .....	28,400	154,000	35,599	60,826
Hanna .....	57,800	88,300	36,235	41,144
Reeves .....	7,500	5,800	6,266	8,650
Boston .....		20,200		10,898
Inland .....		68,100		117,625
Clarkson .....		62,500	7,160	47,180
Northern .....	17,100	47,500	50,189	64,324
Zenith Furnace .....		75,600		18,976
Philadelphia & Reading .....	18,500	27,000	60,501	35,096
U. S. Corporation .....		239,300		134,900
Reiss .....	7,800	44,300	33,790	94,898
Pursglove .....		33,100		14,365
Lehigh .....	32,400		27,888	
Great Lakes .....		52,800	9,530	115,167
August receipts .....	253,700	1,365,500	412,305	1,106,756
Total to August 1 .....	603,770	1,685,400	785,900	5,422,500
Total to September 1 .....	857,470	3,050,900	1,198,205	6,529,256
Anthracite receipts in excess of last year, 340,735 tons.				
Bituminous receipts in excess of last year, 3,478,356 tons.				

### Increase of Wage in Connellsville Region

AFTER another week of strikes, meetings and conferences, the Connellsville coke region has finally settled the grievances and all companies operating, including W. J. Rainey, Inc., have finally adopted the Frick scale, which is what the men demanded. On Friday, Sept. 9, the men at Tower Hill No. 1 plant of the Hillman Coal & Coke Co. struck and demanded the Frick scale, following similar action on the part of the men at all three plants of the American Coke Corporation and the Republic plant of the Republic Iron & Steel Co. the day before. That evening the Hillman Coal & Coke Co., the Republic Iron & Steel Co., the American Coke Corporation, the Brier Hill Coke Co. and the Connellsville Central Coke Co. notified their men that they would pay the Frick scale, and on Saturday the men at Tower Hill No. 1 returned to work, and on the Monday following the rest of the idle men at the plants just mentioned followed their lead.

W. J. Rainey, Inc., on Sept. 13 posted a notice that the Frick scale would be restored but that no coal would be mined for the open market. The entire output will be shipped to the Rainey-Wood byproduct plant at Swedeland, in the eastern part of the State. Stewart, Paull, Fort Hill and possibly Elm Grove will work. Allison will be idle and the mine workers are protesting that the work should be divided evenly.

The Washington Coal & Coke Corporation also announced on Sept. 13 that it would pay the Frick scale. The Oliver-Snyder Co. also has adopted it, so that once again the Frick scale is the scale of the region, practically all the independent companies having fallen into line.

### August Anthracite Shipments 112,355 Tons Greater Than Those of July

SHIPMENTS of anthracite during August, as reported to the Anthracite Bureau of Information, in Philadelphia, amounted to 5,575,115 gross tons, as compared with 5,462,760 tons in the preceding month and with 6,207,653 tons in August, 1920. The decrease from August, 1920, was due chiefly to continued light demand for all sizes except stove, and to a continuance of scattered colliery suspensions caused by market conditions and petty strikes.

Shipments by originating carriers, in gross tons, were:

	August, 1921	July, 1921
Philadelphia & Reading .....	1,116,844	1,039,078
Lehigh Valley .....	924,649	946,387
Jersey Central .....	544,007	507,942
Lackawanna .....	953,014	926,850
Delaware & Hudson .....	756,982	691,132
Pennsylvania .....	360,817	384,780
Erie .....	628,280	619,365
New York, Ontario & Western .....	98,355	110,605
Lehigh & New England .....	192,167	236,621
Totals .....	5,575,115	5,462,760

### Passage of Refunding Bill Would Enable Roads to Pay \$150,000,000 Coal Bill

PROMPT passage of the railroad-refunding bill is generally recognized as the most important single step that could be taken at this time to improve the situation in the coal industry. The railroads owe no less than \$150,000,000 for coal. If that obligation could be discharged, it would relieve the industry from the greatest single burden it has been called upon to bear. There is every reason to believe that the refunding bill will be pushed energetically and that it will have become a law before Dec. 1.

The National Coal Association is co-operating with the Chamber of Commerce of the United States in the collection of exact data as to outstanding railroad accounts.

### Lewis to Represent Miners at Unemployment Conference; 10,500 Idle in Alabama

JOHN L. LEWIS, president of the United Mine Workers, probably will represent coal miners at the conference on unemployment to be held in Washington, which is expected to begin Sept. 26. Government departments dealing with mining have prepared for the conference up-to-date information as to the status of employment this year and last year. It shows that there is a normal employment in anthracite coal mines, but heavy unemployment in bituminous mines. Coal mines in the Birmingham (Ala.) district in normal times furnish work for 26,221 men. Twenty per cent of these have gone into other occupations and of the remaining 20,977 about one-half are unemployed, making a total of 10,500 miners idle, and only 40 per cent of normal working.

### Congress Reconvenes; Coal Industry on Qui Vive as to Coal Legislation

CONGRESS reconvened Wednesday, Sept. 21, after a month's recess, and its assembling opens up the possibility of coal legislation. The coal-stabilization bill of Senator Frelinghuysen, of New Jersey, is on the Senate calendar subject to consideration at any time, and shortly before the recent recess the Senator announced that he would attempt to obtain action after the recess. Senator Penrose, of Pennsylvania, chairman of the Senate Finance Committee, plans to make the tax-revision bill the order of business just as soon as the session opens. The House is not expected to get down to legislative activity until Oct. 1. The session of Congress also will permit the committees of both houses to consider other legislation affecting the coal industry.

## Bituminous Mines Closing Entire Week Gain in Number; Those Working Full Time Decrease

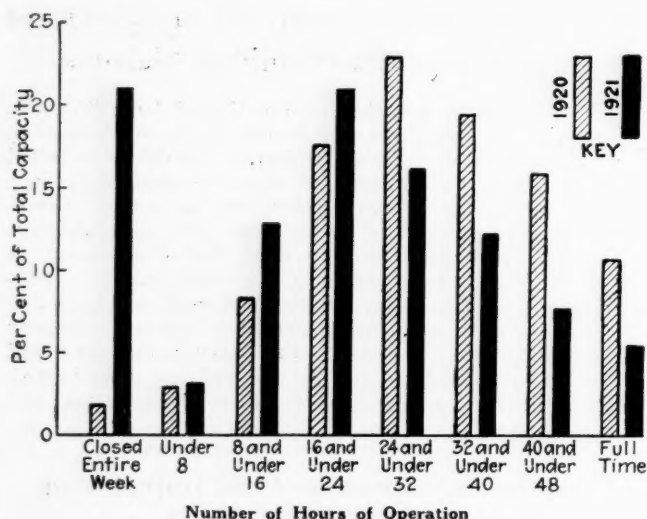
IT IS a familiar fact that from 50 to 60 per cent of the rated capacity of the country's soft-coal mines has been closed down during recent months on account of lack of demand. In the week ended Aug. 20, for example, the average running time was only 42.8 per cent of full time. It has been clear that the average did not reflect the condition at every mine, for into it went many mines entirely idle as well as some which by reason of low costs or fortunate contracts were able to work full time.

Account of the 2,519 mine reports made to the Geological Survey for the week ended March 26, 1921, showed that 710 mines were idle during the entire week. There are always a few mines closed through local strikes or mine disability, but in times of active demand the number entirely idle is small. A sample count in August, 1920, for instance, showed only 96 mines entirely idle, and the Mingo strike alone accounted for half of these. From the following table it will be seen that the number of mines closed down during an entire week has steadily increased since last March. At that time it was 28 per cent of the total number reporting to the Geological Survey; at present it is around 36 per cent. This fact is the more remarkable because the trend of production during the same period has been upward rather than down. It indicates that as the depression is prolonged more and more mines are closed pending a revival of business.

NUMBER OF IDLE, FULL-TIME AND PART-TIME MINES REPORTING WEEKLY TO THE GEOLOGICAL SURVEY <sup>a</sup>

Week Ended	Closed Entire Week	Working Part Time	Working Full Time	Total Number Reporting
Aug. 21, 1920.....	96	2,407	337	2,840 <sup>b</sup>
March 26, 1921.....	710	1,687	122	2,519
July 16, 1921.....	874	1,633	171	2,678
Aug. 20, 1921.....	970	1,547	180	2,697

(a) Includes only commercial operations of some size. (b) See note (a) appended to succeeding table.



WORKING TIME AT SOFT COAL MINES TODAY AND A YEAR AGO

During the week ended Aug. 20, 1921, a total of 2,697 mines, representing 59 per cent of the production of the country, reported production and hours worked to the Geological Survey. It was found that 970 of these mines were closed down the entire week, that only 180 worked full time, and that the remaining 1,547 worked part time. The capacity of each mine thus grouped by time worked was then found, the total capacity of the entire 2,697 being 10,499,000 tons per week. In the diagram the black columns represent the percentage of this total capacity which fell in each time group. Thus 21 per cent of the capacity fell in the group of mines which were closed the entire week, 2.9 per cent in the group producing but working less than eight hours, and so on. The shaded columns show the corresponding data for the same week of 1920. The diagram brings out strikingly how large a part of our mine plant is now entirely idle. Whereas a year ago only 1.2 per cent of the capacity was entirely closed (and most of that on account of the Mingo strike) at present an ordinary week finds more than 20 per cent of the capacity producing no coal and therefore giving employment to almost no men.

Comparisons such as these, however, based on the number of mines, ignore the fact that the smaller properties are the first to close. A more accurate indicator of the importance of the group of idle mines is given in the following table, which shows the percentage of full-time capacity represented by mines closed the entire week, by those working one day, two days, and so on, up to full time. The table shows that during the week in question 21 per cent of the capacity reporting was closed the entire week, as against 1.8 per cent in the corresponding period of 1920. In other words, slightly more than one-fifth of the capacity reporting to the Geological Survey produced no coal and therefore gave employment to practically no men during the week of Aug. 20.

Of course a mine may be closed one week and operate the next, so that the proportion of the capacity closed down for two weeks without a break might be less than 21 per cent, and the proportion closed down a month without a break considerably less than 21 per cent. On the other hand, the number of mines closed down during the week of Aug. 20, which resumed production the following week, would be offset by others which had been working but which dropped into the class of those completely idle. Other recent weeks would, therefore, show about the same proportion closed for an entire week.

It may be asked, How representative is the group of mines upon which the table is based? The tonnage included is 59 per cent of the total for the country. The operations are not wagon mines, but all commercial properties of some size. The average weekly capacity of the 970 mines closed down the entire week was 2,280. The average for the total reporting—2,697—was 3,890 tons, above the country average for commercial mines.

From the way the figures are assembled it is clear that there is a tendency to omit the mines closed down. For those districts such as central Pennsylvania and most of the Trans-Mississippi States, from which the Geological Survey collects reports direct from the operators without the assistance of a local association, there are doubtless many mines closed down concerning which the Survey receives no information. In other districts, where the reports are assembled by secretaries of local associations, an effort has generally been made to report the mines not operating as well as those continuing to produce, but even so, there are naturally many smaller operations not connected with associations which cannot be covered by the local secretary. From these facts it is obvious that were it possible to get complete reports, the number and capacity of the group closed down the entire week would be proportionately greater—perhaps very much greater.

WORKING TIME AT BITUMINOUS COAL MINES, WEEK ENDED AUG. 20, 1921, COMPARED WITH CORRESPONDING WEEK IN 1920 (a)

(Based on reports to the Geological Survey from operators producing about 59 per cent of the output, excluding coal coked at mine.)

Time Group:	Number of Mines		Per Cent of Rated Capacity	
	1920	1921	1920	1921
Mines closed down entire week.....	96 <sup>b</sup>	970	1.8 <sup>b</sup>	21.0
Mines reporting production but working less than 8 hours.....	67	69	2.9	3.2
Mines working 8 and less than 16 hours.....	261	280	8.4	12.9
Mines working 16 and less than 24 hours.....	500	407	17.6	21.0
Mines working 24 and less than 32 hours.....	590	327	23.0	16.2
Mines working 32 and less than 40 hours.....	513	263	19.5	12.2
Mines working 40 and less than 48 hours.....	476	201	16.0	7.9
Mines working full time of 48 hours or more.....	337	180	10.8	5.6
Total, all mines.....	2,840	2,697	100.0	100.0

(a) The week selected for analysis in 1920 (Aug. 16-21) corresponds to that for 1921. It so happened, however, that the week of Aug. 21, 1920, was marked by short-lived strikes in Indiana and in two districts of Illinois. To avoid the abnormal condition indicated by these strikes, the figures for the week ended Aug. 14 were used for Indiana, and for the Belleville and Williamson County districts of Illinois those for the week of Aug. 28 were used. As no reports were available from the Harlan district for the week of Aug. 21, those for Aug. 14 were used; and for the same reason the Utah reports for the week of Sept. 25 were employed. None of these substitutions affects the comparability of the data for 1920 and 1921. (b) Of the group entirely idle in 1920, 43 mines representing 1 per cent of the capacity were accounted for by the long-drawn out strike in the Kenova-Thacker (Williamson) field.



## Four Coal Men Named for Unemployment Conference; To Convene Sept. 26

AMONG the delegates to the unemployment conference appointed Sept. 20 by President Harding are several representatives of the coal industry. The conference will convene Sept. 26. Secretary of Commerce Hoover will be chairman, but it is expected that the body will be separated into groups to consider the problems relating to the various industries. The coal men include John T. Connery, of Chicago, president of the Miami Coal Co.; W. K. Field, of Pittsburgh, president of the Pittsburgh Coal Co.; E. M. Posten, of Columbus, Ohio, president of the New York Coal Co. Edgar E. Clark, who was a member of President Roosevelt's anthracite commission of 1902 and formerly chairman of the Interstate Commerce Commission; Harry S. Robinson, of Los Angeles, who was chairman of the 1920 Bituminous Coal Commission, and John L. Lewis, president of the United Mine Workers, were also named as delegates, as was predicted in earlier advices, printed on page 469.

## Railroads Pay 64c. Per Freight-Train Mile For Fuel; 57.5c. in 1920

IN A REPORT on freight-train service for the first six months of 1921 the Interstate Commerce Commission states that the cost of fuel per freight-train mile was \$0.640 as compared with \$0.575 in 1920. The cost of coal per net ton, invoice plus freight, for both freight-and passenger-train service was \$4.33 per ton as against \$3.72 in 1920. The cost per 1,000 gross ton miles, excluding locomotive and tender, for fuel was \$0.455 as against \$0.411 in 1920. The net tons of coal charged to account 394 was 45,611,000 as against 55,662,000 in 1920. For the passenger-train service the cost per passenger train mile of fuel in the 1921 six-months period was \$0.288 as against \$0.266 in 1920.

## United Mine Workers, in Convention, to Take Up Wage Question

THE biennial convention of the United Mine Workers of America began its sessions in Indianapolis Tuesday, Sept. 20, with the wage question the topic of paramount interest in the minds of the delegates. John L. Lewis, pres-

ident of the international union, has declared against wage reductions, and the convention probably will be asked to indorse this policy. Present wage agreements between miners and operators expire next March 31, and meanwhile new scales must be negotiated by both the bituminous and anthracite miners.

No time for the convention's adjournment has been set, but the international officers expect that sessions will continue at least two weeks, with most of the real convention work getting under way late the first week.

**FEW MEN AT COLORADO FUEL & IRON MINES.**—According to General Manager Wertzel only 1,332 men are now employed at the mines of the Colorado Fuel & Iron Co. as against 3,375 working at normal times. On Sept. 10 the Colorado Industrial Commission commenced to investigate the reduction in wage and hearings were commenced at Walsenburg and will be continued in the various districts in which the company has mines. No disturbances have occurred, but Governor Shoup has ordered a number of State Rangers to the affected districts with strict orders to repress any movement leading to disorder.

**ONE MINE CLOSED FOR REPAIRS, REST GO ON STRIKE.**—Because the G. M. Jones Co.'s No. 209 mine, near Athens, Ohio, was shut down for repairs the men considered they were discriminated against and induced the men at Mines Nos. 210 and 211 of the same company to go on strike for the purpose of having Mine No. 29 placed in operation. The controversy, which involved 250 men, was settled Sept. 14. The mines are operated by the Ohio Collieries Co.

**THE RETAIL FOOD INDEX** issued by the U. S. Department of Labor through the Bureau of Labor Statistics shows that there was an increase of 4.3 per cent in the retail cost of food to the average family in August as compared with July. Prices of forty-three food articles are reported to the Bureau of Labor Statistics each month by retail dealers in fifty-one important cities. From these prices average prices are made for each article. These average prices are then "weighted" according to the quantity of each article consumed in the average workingman's family. From January, 1913, to December, 1920, twenty-two articles of food were used in this index, but from January, 1921, forty-three articles are included in the index number.

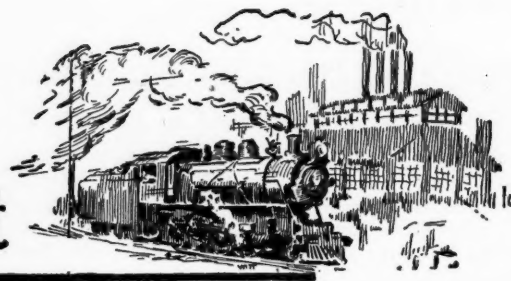
# Coal Produced in the United States During 1919\*

State	(In Net Tons)										Average Number of Days Worked	
	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Made into Coke at Mines	Total Quantity	Total Value	Average Value per Ton	Under-ground	Surface	Total		
Alabama.....	13,869,680	200,535	541,149	925,357	15,536,721	\$45,937,681	\$2.96	20,660	6,214	26,874	239	
Alaska.....	57,676	733	2,265		60,674	343,547	5.66	103	63	166	280	
Arkansas.....	1,351,266	22,984	54,770		1,429,020	5,288,844	3.70	3,096	718	3,814	136	
California and Idaho.....	2,448	3,591	515		6,554	22,174	3.38	54	23	77	59	
Colorado.....	9,438,120	412,986	287,199	185,115	10,323,420	28,748,534	2.78	8,931	2,898	11,829	225	
Georgia.....	15,028	679	4,600	33,030	53,337	198,033	3.71	108	60	168	284	
Illinois.....	55,540,051	3,374,419	1,948,138		60,862,608	140,075,969	2.30	75,013	10,007	85,020	160	
Indiana.....	19,423,744	804,624	683,920		20,912,288	46,345,750	2.22	25,316	4,671	29,987	148	
Iowa.....	4,849,636	610,937	164,119		5,624,692	17,352,620	3.09	10,873	1,493	12,366	176	
Kansas.....	4,919,654	136,202	168,868		5,224,724	15,917,053	3.05	8,173	1,753	9,926	182	
Kentucky.....	27,907,773	978,857	677,227	472,204	30,036,061	73,891,049	2.46	35,530	10,068	45,598	189	
Maryland.....	2,899,931	75,374	46,381		3,021,686	8,255,984	2.73	4,422	972	5,394	179	
Michigan.....	901,263	11,458	83,824		996,545	3,864,228	3.88	1,851	253	2,104	179	
Missouri.....	3,414,223	422,479	143,096		3,979,798	12,766,366	3.21	7,235	2,079	9,314	175	
Montana.....	2,887,620	185,356	163,393		3,236,369	8,644,344	2.67	3,318	805	4,123	194	
New Mexico.....	2,583,097	38,615	44,011	473,033	3,138,756	9,750,833	3.11	2,918	827	3,745	273	
North Carolina.....	3,229	387	3,373		6,989	26,871	3.84	37	12	49	100	
North Dakota.....	607,634	217,902	15,423		840,959	2,100,303	2.50	758	314	1,072	216	
Ohio.....	33,054,103	2,161,716	659,571	1,292	35,876,682	79,496,301	2.22	41,336	8,288	49,624	164	
Oklahoma.....	3,462,294	125,312	178,995	35,512	3,802,113	14,544,901	3.83	6,996	1,452	8,448	184	
Oregon.....	10,917	3,103	4,719		18,739	63,794	3.40	52	15	67	259	
Pennsylvania (bit.).....	120,704,245	5,141,075	3,305,764	21,607,070	150,758,154	365,430,504	2.42	143,838	30,712	174,550	218	
South Dakota.....	450	13,939	28		14,417	45,707	3.17	43	3	46	164	
Tennessee.....	4,744,543	128,420	146,631	193,611	5,213,205	14,448,168	2.77	8,976	2,547	11,523	201	
Texas.....	1,629,795	3,920	46,941		1,680,656	4,527,640	2.69	3,018	626	3,644	227	
Utah.....	4,051,464	101,233	81,706	396,920	4,631,323	12,760,613	2.76	2,709	1,148	3,857	239	
Virginia.....	7,558,507	165,433	117,527	1,485,313	9,326,830	23,774,941	2.55	9,471	2,115	11,586	247	
Washington.....	2,681,244	79,150	175,253	54,800	2,990,447	10,691,222	3.58	3,801	1,235	5,036	217	
West Virginia.....	73,672,527	2,548,896	1,097,232	1,717,898	79,036,553	196,551,015	2.49	74,350	20,355	94,705	200	
Wyoming.....	6,906,592	98,263	214,883		7,219,738	18,751,024	2.60	5,815	1,471	7,286	221	
Total bituminous.....	409,148,754	18,068,578	11,061,571	27,581,155	465,860,058	\$1,160,616,013	\$2.49	508,801	113,197	621,998	195	
Pennsylvania anthracite.....	76,128,970	2,360,821	9,602,410		88,092,201	364,926,950	4.14	107,829	46,742	154,571	266	
Grand totals.....	485,277,724	20,429,399	20,663,981	27,581,155	553,952,259	\$1,525,542,963	\$2.75	616,630	159,939	776,569	209	

\* Preliminary summary issued by the U. S. Geological Survey, Sept. 17, 1921.



# Production and the Market



## Weekly Review

**P**RODUCTION of bituminous coal is at a rate but slightly above that in August, when, except during the first week, it was from 7,500,000 to 7,750,000 tons. As an indicator of general business activity, bituminous-coal production is unequalled, but, unfortunately for the coal producer, there is no positive indicator to show in advance how demand will be next week or next month. A stiffening in coal prices is, of course, positive evidence of better demand, but we may have an increase in production and a drop in prices, such as has happened in several market centers recently. A small increase in the call for coal revealed such a general desire to share in the business that the quantity of coal shipped on consignment broke even the low price.

Now, there is nothing in the course of either production or prices in recent weeks such as would indicate any change in the near future. The interest of buyers in the possibility of an upturn in the coal market is equally as great as that of the producer, because a mistake on the part of the buyer in changing his business from spot to contract at the proper time means as much to him as to the producer.

### INDICATIONS ARE ENCOURAGING TO COAL INDUSTRY

It is outside the coal market, therefore, that we must turn to for signs of encouragement. Such signs are not lacking. Financial observers say that every sign now is a sign of promise and point out that the mercantile community is about convinced that prices will be no lower this winter or next spring than now, and, acting on this feeling, they may be expected to begin buying for consumption and, what is more important, to fill depleted stocks of merchandise. It is significant that car loadings of manufactured goods, as shown by the railroad figures, are increasing somewhat faster than loadings of other material. If nothing else will do it, the seasonal requirements for coal for what industry is going, coupled with household demand, in the terri-

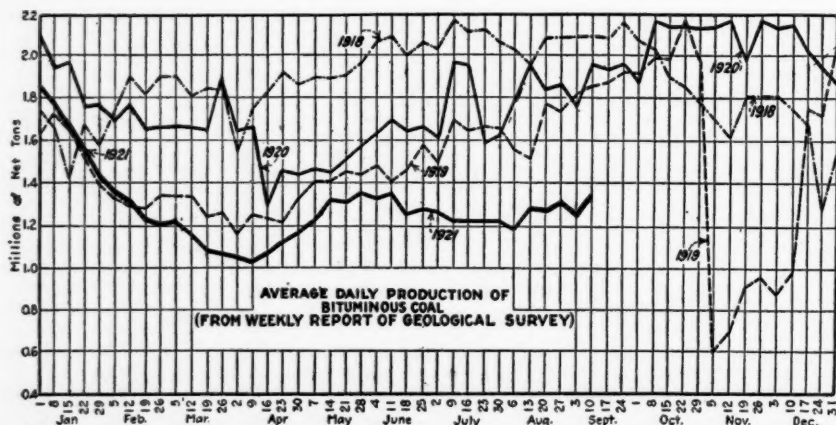
tory west of where hard coal is burned, will strengthen the coal business by the time frost comes, but it is for evidence of real improvement in basic conditions, that we are seeking. The Department of Commerce Survey of Current Business for August, published this week, shows among other things that the consumption of wool is rapidly increasing; of cotton is halting; that the news print mills are heavily stocked (with paper) and production and sales have been curtailed since the first of the year; that in the building industry, residential and business building activity exceeds greatly that for industrial purposes; that steel-ingot production and exports have declined together; that grain exports (particularly of corn) and meat exports (particularly hog products) are very large, and that shipments of automobiles from factories are declining from the high point this year in June.

On the whole, the above-ground supply of steam coal is considered sufficient to absorb the shock of any increase in demand that the most optimistic can foresee, save only that attendant on the expected strike of coal mines next spring, and that is still some distance off.

COAL AGE index of spot prices for Sept. 20 is unchanged at 91. This is the third consecutive week of firm quotations which go to make up this index. While some steam prices have been depressed by the heavier volume of resultant coals made because of the increased domestic demand, the fact that industry in general is absorbing this steam tonnage with no great price concessions is indicative of a better outlook.

### BITUMINOUS

As expected, the Labor Day holiday cut into production during the week ended Sept. 10. The total output was 7,035,000 net tons as against 7,615,000 in the latest full-time week. The production rate per working day, however, increased during the shorter week and further improvement is shown in the reports for the first two days of the following week (Sept. 12-17), when loadings totaled 55,134 cars.



### Estimates of Production (NET TONS)

BITUMINOUS COAL			
Week Ended	1921	1920	
Aug. 27 (b) .....	7,753,000	11,383,000	
Sept. 3 (b) .....	7,615,000	11,167,000	
Sept. 10 (a) .....	7,035,000	10,685,000	
Daily average .....	1,320,000	2,016,000	
Calendar year (a) .....	271,716,000	365,081,000	
Daily average, calendar year .....	1,273,000	1,707,000	
ANTHRACITE			
Aug. 27 (b) .....	1,893,000	1,868,000	
Sept. 3 (b) .....	1,800,000	1,114,000	
Sept. 10 (a) .....	1,508,000	562,000	
Calendar year (a) .....	62,108,000	61,619,000	
BEEHIVE COKE			
Sept. 3 (b) .....	58,000	396,000	
Sept. 10 (a) .....	60,000	438,000	
Calendar year .....	3,900,000	14,890,000	

(a) Subject to revision. (b) Revised from last report.



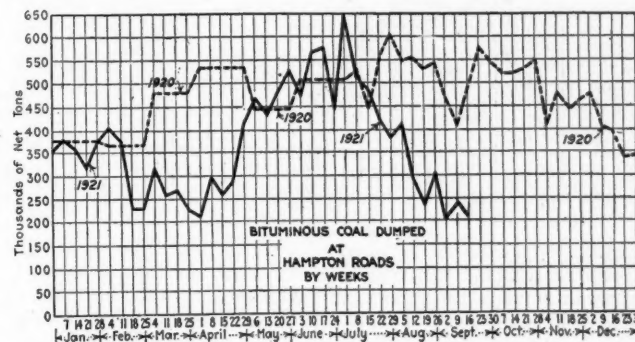
Industries, while in an improved position, are still cautious about their fuel orders and are buying on the spot market only. The market fails to reflect favorable influences. At the same time, especially in the Middle West, inquiries for tonnage thirty days hence are rapidly increasing, accompanied by a request that the buyers be protected on the quotation for two or three weeks.

At present steam coals are in increasing oversupply. The seasonal demand for domestic has forced much resultant coal on the bargain counter and the wise purchasing agent is availing himself of the offers of choice coals at attractive figures. Retail stocks of household coal are growing, as the ultimate consumer is buying only in small lots, due to a desire to economize as well as to the hope that something may yet force down mine prices or freight rates.

The foreign market is absolutely stagnant. Loadings at Hampton Roads during the week ended Sept. 16 were the lowest in five years. Total dumpings for all accounts during that period were 190,211 gross tons, as compared with 216,740 the week preceding. Coastwise bargains and bunker business constitute present activities at the piers, although the New England contract movement is being maintained at the rate which has prevailed for the last thirty days.

The all-rail movement to New England declined to 2,470 cars during the week ended Sept. 10 from 2,580 cars the week before. This compares with 5,054 cars during the

corresponding week of 1920. Pennsylvania grades all-rail are difficult to sell because of the close competition of waterborne coal.



Slightly higher quotations have appeared in the New England market. There is more interest being shown by the smaller buyers, who have been inactive for weeks. There is less tendency to quote at the low level which prevailed a week ago. Pocahontas and New River have strengthened to \$5 f.o.b. Hampton Roads while a few days ago considerable tonnage could be picked up at \$4.80.

Aside from some late buying of special coals from Kentucky and West Virginia, there is little activity in the Lake

### Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern					Market Quoted	Aug. 16, 1921	Sept. 6, 1921	Sept. 13, 1921	Sept. 20, 1921						Market Quoted	Aug. 16, 1921	Sept. 6, 1921	Sept. 13, 1921	Sept. 20, 1921					
Pocahontas lump.....	Columbus.....	\$5.20	\$5.35	\$5.20	\$4.75@	\$5.00				Pitts. No. 8 mine run.....	Cleveland.....	\$2.30	\$2.30	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25	\$2.25					
Pocahontas mine run.....	Columbus.....	3.00	3.15	3.15	2.65@	2.85				Pitts. No. 8 screenings.....	Cleveland.....	1.80	1.65	1.60	1.60	1.60	1.60	1.60	1.60					
Pocahontas screenings.....	Columbus.....	2.40	2.30	2.45	2.00@	2.40																		
Pocahontas lump.....	Chicago.....	5.25	5.15	4.95	4.50@	5.00																		
Pocahontas mine run.....	Chicago.....	3.00	2.50	3.10	2.40@	3.50																		
*Smokeless mine run.....	Boston.....	5.50	5.15	5.00	4.90@	5.15																		
Clearfield mine run.....	Boston.....	1.90	1.95	1.95	1.65@	2.20																		
Cambria mine run.....	Boston.....	2.55	2.40	2.35	2.00@	2.65																		
Somerset mine run.....	Boston.....	1.70	1.75	1.75	1.45@	2.00																		
Pool 1 (Navy Standard).....	New York.....	3.15	3.25	3.40	3.00@	3.50																		
Pool 1 (Navy Standard).....	Philadelphia.....	2.95	2.95	2.95	2.90@	3.25																		
Pool 1 (Navy Standard).....	Baltimore.....	2.50	2.50	2.90	2.70@	2.80																		
Pool 9 (Super. Low Vol.).....	New York.....	2.55	2.45	2.60	2.25@	2.50																		
Pool 9 (Super. Low Vol.).....	Philadelphia.....	2.35	2.35	2.35	2.25@	2.50																		
Pool 9 (Super. Low Vol.).....	Baltimore.....	2.25	2.20	2.30	2.25@	2.50																		
Pool 10 (H. Gr. Low Vol.).....	New York.....	2.25	2.20	2.30	2.00@	2.35																		
Pool 10 (H. Gr. Low Vol.).....	Philadelphia.....	2.05	2.05	2.05	1.90@	2.15																		
Pool 10 (H. Gr. Low Vol.).....	Baltimore.....	2.10	2.00	2.20	2.15@	2.35																		
Pool 11 (Low Vol.).....	New York.....	1.95	2.05	2.15	1.75@	2.00																		
Pool 11 (Low Vol.).....	Philadelphia.....	1.75	1.80	1.80	1.75@	1.90																		
Pool 11 (Low Vol.).....	Baltimore.....	1.75	1.80	2.00	2.00																			
High-Volatile, Eastern																								
Pool 54-64 (Gas and St.).....	New York.....	1.85	1.80	1.90	1.65@	2.00																		
Pool 54-64 (Gas and St.).....	Philadelphia.....	1.65	1.70	1.70	1.60@	1.75																		
Pool 54-64 (Gas and St.).....	Baltimore.....	1.60	1.60	1.70	1.50@	1.85																		
Pittsburgh sc'd gas.....	Pittsburgh.....	2.70	2.65	2.65	2.55@	2.75																		
Pittsburgh mine run (St.).....	Pittsburgh.....	2.10	2.25	2.25	2.00@	2.25																		
Pittsburgh slack (Gas).....	Pittsburgh.....	1.70	1.70	1.70	2.00@	2.25																		
Kanawha lump.....	Columbus.....	3.45	3.45	3.45	3.25@	3.65																		
Kanawha mine run.....	Columbus.....	2.10	2.15	2.15	2.00@	2.25																		
Kanawha screenings.....	Columbus.....	1.50	1.30	1.30	1.10@	1.30																		
Hocking lump.....	Columbus.....	3.15	3.20	3.20	3.00@	3.50																		
Hocking mine run.....	Columbus.....	2.15	2.15	2.15	2.00@	2.25																		
Hocking screenings.....	Columbus.....	1.50	1.30	1.25	1.10@	1.25																		
Pitts. No. 8 lump.....	Cleveland.....	3.25	3.25	3.25	3.00@	3.50																		
										Midwest														
										Franklin, Ill. lump.....					Chicago.....	3.80	3.65	3.65	3.25@	4.05				
										Franklin, Ill. mine run.....					Chicago.....	3.30	2.95	2.95	2.85@	3.60				
										Franklin, Ill. screenings.....					Chicago.....	1.75	1.85	1.95	1.10@	2.65				
										Central, Ill. lump.....					Chicago.....	2.90	2.70	2.70	2.40@	3.00				
										Central, Ill. mine run.....					Chicago.....	2.15	2.40	2.40	2.00@	2.75				
										Central, Ill. screenings.....					Chicago.....	1.55	1.75	1.65	0.90@	2.85				
										Ind. 4th Vein lump.....					Chicago.....	3.60	2.95	2.95	2.35@	3.50				
										Ind. 4th Vein mine run.....					Chicago.....	3.10	2.55	2.55	0.80@	2.75				
										Ind. 4th Vein screenings.....					Chicago.....	2.15	1.70	1.70	1.15@	1.15				
										Ind. 5th Vein lump.....					Chicago.....	2.90	2.90	2.90	2.50@	3.25				
										Ind. 5th Vein mine run.....					Chicago.....	2.45	2.50	2.50	0.80@	2.75				
										Ind. 5th Vein screenings.....					Chicago.....	1.65	1.75	1.75	1.10@	1.15				
										Standard lump.....					St. Louis.....	2.65	2.50	2.65	2.50@	3.00				
										Standard mine run.....					St. Louis.....	1.75	1.85	1.95	1.85@	2.00				
										Standard screenings.....					St. Louis.....	1.10	0.85	0.75		0.60				
										West. Ky. lump.....					Louisville.....	3.00	3.05	2.75	2.25@	3.25				
										West. Ky. mine run.....					Louisville.....	2.45	2.35	2.25	2.05@	2.40				
										West Ky. screenings.....					Louisville.....	1.70	1.25	1.30	1.09@	1.65				
										South and Southwest														
										Big Seam lump.....					Birmingham.....	3.75	3.85	3.75	3.25@	4.25				
										Big Seam mine run.....					Birmingham.....	2.15	2.15	2.15	2.00@	2.25				
										Big Seam (washed).....					Birmingham.....	2.40	2.40	2.40	2.25@	2.50				
										S. E. Ky. lump.....					Louisville.....	3.65	3.50	3.50	3.25@	3.75				
										S. E. Ky. mine run.....					Louisville.....	2.35	2.35	2.15	2.00@	2.35				
										S. E. Ky. screenings.....					Louisville.....	1.70	1.55	50	1.40@	1.60				
										Kansas lump.....					Kansas City.....	5.65		5.75		5.75				
										Kansas mine run.....					Kansas City.....	4.40		4.25		4.25				
										Kansas screenings.....					Kansas City.....	3.25		2.50		2.50				
*Gross tons, f.o.b. vessel, Hampton Roads.																								
†Advances over previous week shown in heavy type, declines in italics.																								

\*Gross tons, f.o.b. vessel, Hampton Roads.

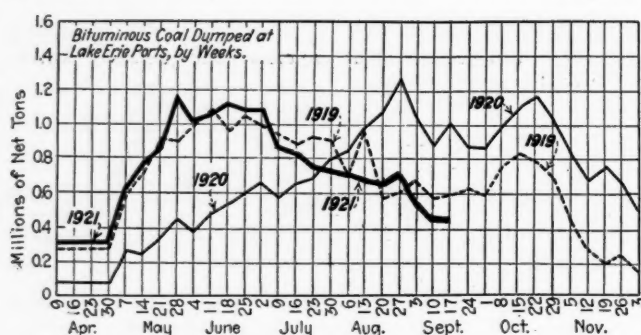
†Advances over previous week shown in heavy type, declines in italics.

### Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

		Market Quoted		Freight Rates		Sept. 6, 1921		Sept. 13, 1921		Sept. 20, 1921	
						Independent		Independent		Independent	
Broken.....	New York.....	\$2.61				\$7.60@	\$7.75	\$7.60@	\$7.75	\$7.60@	\$7.75
Broken.....	Philadelphia.....	2.66				7.75@	7.85	7.75@	7.85	7.75@	7.85
*Broken.....	Chicago.....	5.62				12.75		12.75		12.75	
Egg.....	New York.....	2.61				7.75@	8.15	7.75@	8.15	7.75@	8.15
Egg.....	Philadelphia.....	2.66				8.10@	8.35	8.10@	8.35	8.10@	8.35
*Egg.....	Chicago.....	5.62				12.80		12.80		12.80	
Stove.....	New York.....	2.61				8.25@	8.50	8.25@	8.50	8.25@	8.50
Stove.....	Philadelphia.....	2.66				8.25@	8.60	8.25@	8.60	8.25@	8.60
*Stove.....	Chicago.....	5.62				13.40		13.40		13.40	
Chestnut.....	New York.....	2.61				7.75@	8.15	7.75@	8.15	7.75@	8.15
Chestnut.....	Philadelphia.....	2.66				8.20@	8.75	8.20@	8.75	8.20@	8.75
*Chestnut.....	Chicago.....	5.62				13.10		13.10		13.10	
Pea.....	New York.....	2.47				5.00@	5.35	5.00@	5.35	5.00@	5.35
Pea.....	Philadelphia.....	2.38				4.50@	5.50	4.50@	5.50	4.50@	5.50
*Pea.....	Chicago.....	5.62				11.10		11.10		11.10	
Buckwheat No. 1.....	New York.....	2.47				2.75@	3.50	3.00@	3.50	2.75@	3.50
Buckwheat No. 1.....	Philadelphia.....	2.38				2.50@	3.00	2.50@	3.00	2.50@	3.00
Rice.....	New York.....	2.47				1.75@	2.50	2.00@	2.50	2.00@	2.50
Rice.....	Philadelphia.....	2.38				1.75@	2.00	2.50		1.75@	2.00
Barley.....	New York.....	2.47				1.10@	1.50	1.25@	1.50	1.25@	1.50
Barley.....	Philadelphia.....	2.38				1.00@	1.25	1.50		1.00@	1.25
Birdseye.....	New York.....	2.47						2.50			

\*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.

†Advances over previous week shown in heavy type, declines in italics.



trade. Upper Lake docks are well supplied and no shortage is feared this winter. The Northwest is taking heavier shipments from the docks and it appears that this movement will soon reach normal. The dock space made available by this movement is being filled promptly by the arrival of cargoes from the lower ports. Lake dumpings during the week ended Sept. 17 were 477,371 net tons—455,387 tons cargo and 21,984 tons vessel fuel—as compared with 453,927 tons during the preceding week. Movement for the season to date now stands at 17,670,651 tons as against 13,945,709 tons in 1920.

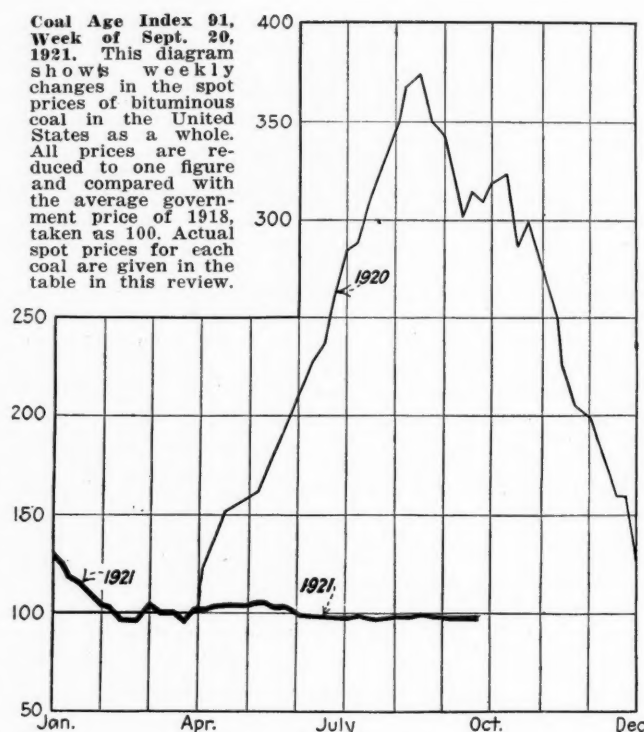
#### ANTHRACITE

Production of hard coal during the week ended Sept. 10 was 1,508,000 net tons as against 1,800,000 tons in the week preceding, according to the Geological Survey. The decrease was almost entirely caused by the observance of Labor Day.

Domestic sizes are moving more easily but demand is still below expectations. Independent producers are obtaining a premium on the larger sizes although pea and the smaller coals are frequently in distress.

Lake dumpings are declining. During the week ended Sept. 14 the Buffalo piers moved 101,400 net tons, as compared with recent weekly dumpings of around 175,000 tons. Rail shipments to New England were 1,806 cars during the week ended Sept. 10, as compared with 2,479 tons during the preceding week.

Coal Age Index 91, Week of Sept. 20, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.



#### COKE

The production of beehive coke still remains in the doldrums. During the week ended Sept. 10 the output was 60,000 tons, only 2,000 tons in excess of the previous week.

The labor situation among the independent Connellsville operators is now fairly well cleared. The majority have advanced to the Frick scale of Aug. 1 and a resumption of operations has followed at several plants. Prices have been trending upward in the past week.

## Foreign Market And Export News

#### Coal Paragraphs from Foreign Lands

**ITALY**—Total imports during August were 474,378 tons, according to a cable to *Coal Age*. The tonnage came principally from England, United States, Germany, France and Belgium. Prices have declined considerably owing to the keen competition between Great Britain and the United States. Cardiff steam firsts are 225@235 lire, on wagons, a decline of 45 lire from last quotations; American steam is 190@200 lire as compared with 250@260 lire, quoted Sept. 8.

**GERMANY**—Production in the Ruhr district for the week ended Sept. 3 was 1,741,810 metric tons, according to cabled advices to *Coal Age*. This compares with 1,787,085 tons in the week ended Aug. 27.

**BELGIUM**—There is still much uneasiness in the industrial coal market, and production continues in excess of demand. It is hoped, however, that the improvement in the iron and steel industries will lead to better conditions.

Orders for domestic coal are still larger than can be dealt with and deliveries are irregular. It is thought that the high prices which ruled immediately after the armistice will return this winter. Cobbles are quoted at 121 and 123 francs on wagons.

**SPAIN**—With a better rate of operation now prevailing, Asturian coal mines are endeavoring to compete with English coal. Prices at Barcelona are from 5 to 10 pesetas lower than those reported two weeks ago. Quotations are: screened, 115 pesetas; cobbles, 105, and smalls, 80 pesetas.

#### Hampton Roads Exports Lowest in Five Years; No Business Offering

Exporting continues to decline to the point of comparative inactivity. During the week ended Sept. 15 only four vessels cleared with coal for foreign ports, the lowest weekly record of the last five years.

Movement of coal coastwise is

steady, with the bunker business holding its own. At the end of the week, however, vessel tonnage awaiting cargo had reached a total of only 16,600, with no ships scheduled as bound for this port for coal.

Prices remain comparatively unchanged, with special quotations being made to dispose of demurrage coal. New England movement is on contract for the most part.

Accumulations at Tide are gradually diminishing. They have reached approximately 175,000 tons, which is 50,000 tons below the average. Practically no movement of high-volatile coal was noted during the week, in spite of attractive prices. Nearly 100,000 tons of this grade is now on hand. The local situation, so far as foreign cargoes are concerned, is not likely to improve before next year.

#### PIER SITUATION

	Week Ended Sept. 8	Sept. 15
N. & W. Piers, Lambert's Point:		
Cars on hand.....	1,761	1,323
Tons on hand.....	92,405	67,680
Tons dumped during week....	95,864	84,787
Tonnage waiting.....	4,000	13,500
Virginian Ry. Piers, Sewall's Point:		
Cars on hand.....	1,640	1,647
Tons on hand.....	82,000	82,350
Tons dumped during week....	74,125	52,601
Tonnage waiting.....	2,769	2,000
C. & O. Piers, Newport News:		
Cars on hand.....	2,116	1,945
Tons on hand.....	105,800	97,000
Tons dumped during week....	46,751	52,823
Tonnage waiting.....	3,300	1,100



## British Producers Storm Foreign Markets

French Buyers Get Low Quotations—American Exporters Find Competition too Stiff—British Mines Must Secure Outlet for Surplus Coal

Production in the United Kingdom for the week ended Sept. 3 was 4,143,900 gross tons, according to cabled advices to *Coal Age*. This represents a slight increase over the preceding week.

Newcastle shippers express considerable satisfaction over the purchase by the Turin gas works of 10,000 tons of gas coal and by the Milan gas works of 40,000 tons, for September and December delivery. The price on the smaller tonnage was reported as 26s. 9d., much below current quotations.

The serious effect of wages on the cost of production is shown by the closing down of several pits. In the last of the pits shut down, coal was costing 30s. per ton to raise.

On the other hand, the general opinion in Cardiff, is that the British export coal trade is in satisfactory position in spite of the high railroad rates and the cost of production. Producers feel that they have reached the stage where they can now practically eliminate the American exporter on the basis of present costs. As a result, they feel that foreign purchasers will undoubtedly prefer Welsh coal to American. Foreign purchasers are withholding orders, hoping for a still further price reduction. This action is only having the effect of increasing the British quotations. The opinion prevails that pressure must be brought to bear to bring about a reduction in railway and dock rates, which would enable British producers to reopen the mines that are now closed.

### Unprecedentedly Low Prices Quoted On British Coal at Rouen

Demand for industrial coal is extraordinarily weak, whereas on account of the nearing winter the house coal demand increases slightly. With the production of French mines, existing stocks and the German coal deliveries, even on the basis of the present reduced quantities, France has more coal available than is needed. Belgian competition has already compelled the Nord and Pas de Calais mines to reduce their prices on briquettes and ovoids.

English exporters, who are overburdened with coals are quoting incredibly low prices. To illustrate this, Newcastle prime large coals are offered at 105 francs delivered on wagon or barge at Rouen. Freight on the Seine being 5 francs per ton, this gives a total of 110 francs c.i.f., Paris, whereas from the Pas de Calais, an equivalent fuel cannot at present be supplied at less than 130 francs. In other sections, Welsh smalls are quoted delivered, Paris, at the equivalent of the cost at mines in the Nord and Pas de Calais.

This position is becoming alarming for the French producers who, if British exporters can go on quoting the above prices, will have to turn to the miners for a reduction in wages, in order to be able to stand this competition.

The French State Rys. have placed contracts in London for 20,000 tons of best Monmouthshire large coals on the basis of 83 francs c.i.f., immediate delivery.

Stocks of coal in France at the end of July were estimated at 4,491,645 tons, according to *Commerce Reports*. These were distributed as follows: 1,350,350 tons at the French mines, 269,179 tons in the Saar Basin mines, 536,130 tons at the French ports, and 1,663,200 tons with the railroads.

Imports, including British, German and American coals, via French ports were 274,000 tons in the week ended Aug. 11, compared with 236,000 tons in the week of Aug. 18.

Great fear is expressed in regard to supplying Paris with coals next winter. Owing to the long abnormal draught, which has considerably reduced the draft on canals, and extensive repair work on the Northern canal system which is not proceeding as fast as was expected, more than 600 barges loaded with coal and bound for Paris have now been idle for weeks.

THE GREAT NORWEGIAN SPITZBERG COAL MINING Co. is at present making extensive developments on the Island of Spitzberg. It is expected that during

the present year the Great Norwegian Coal Mining Co. will be able to ship 100,000 tons.

### British Regaining Export Stride

During the period of the British strike, American exporters were quick to take advantage of the inability to continue the exportation of British coals. With the resumption of the collieries in Great Britain, much of this trade has deserted American shippers, as shown in the following table of exports:

	U. S. Tons	Britain Tons
January .....	2,248,448	1,700,000
February .....	1,258,670	1,728,000
March .....	1,151,840	1,986,000
April .....	1,453,027	*607,000
May .....	2,500,374	*14,000
June .....	3,314,513	*8,000
July .....	2,649,989	*816,000
August .....		3,103,000

\*Duration and effect of strike.

### Export Clearances, Week Ended September 15

FROM HAMPTON ROADS		Tons
For Canal Zone:		
Am. SS. Cristobal for Cristobal .....		9,606
For Cuba:		
Am. SS. Montoso for San Juan .....		3,913
For Dominican Republic:		
Am. Schr. Rosalie Hull for Sanchez .....		1,130
FROM PHILADELPHIA		
For Brazil:		
Br. SS. Glenearn for Rio de Janeiro .....		3,035

### Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS		Sept. 10	Sept. 17†
Pool 9, New York...	\$5.75@	\$6.00	\$5.75@ \$5.85
Pool 10, New York...	5.50@	5.85	5.50@ 5.60
Pool 9, Philadelphia...	5.80@	6.00	5.80@ 6.00
Pool 10, Philadelphia...	5.40@	5.70	5.40@ 5.70
Pool 71, Philadelphia...	6.00@	6.25	6.00@ 6.25
Pool 1, Hampton Roads .....	4.80@	5.25	4.80@ 5.25
Pools 5-6-7, Hampton Roads...	4.50		4.50@ 4.80

BUNKERS		Sept. 10	Sept. 17†
Pool 9, New York...	\$6.20@	\$6.30	6.10@ 6.20
Pool 10, New York...	5.95@	6.05	5.85@ 5.95
Pool 9, Philadelphia...	6.10@	6.30	6.10@ 6.30
Pool 10, Philadelphia...	5.75@	6.00	5.75@ 6.00
Pool 1 Hampton Roads .....	5.10@	5.25	5.15@ 5.25
Pool 5, 6, 7, Hamp. Rds.	4.65		4.60@ 4.80
Welsh, Gibraltar .....	50s. f.o.b.		50s. f.o.b.
Welsh, Port Said .....	64s. f.o.b.		64s. f.o.b.
Welsh, Singapore .....	75s. f.o.b.		75s. f.o.b.
Welsh, Rio Janeiro .....	75s. f.o.b.		75s. f.o.b.
Welsh, Algiers .....	50s. f.o.b.		50s. f.o.b.
Welsh, Malta .....	60s. f.o.b.		60s. f.o.b.
Welsh, Lisbon .....	57s. 6d. f.o.b.		57s. 6d. f.o.b.
Welsh, La Plata .....	70s. f.o.b.		70s. f.o.b.
Welsh, Madeira .....	57s. 6d. f.a.s.		57s. 6d. f.a.s.
Welsh, Tenerife .....	57s. 6d. f.a.s.		57s. 6d. f.a.s.
Welsh, Genoa .....	58s. t.i.b.		58s. t.i.b.
Durham, Newcastle .....	35s. @ 37s.		35s. @ 37s.
Belgian, Antwerp .....	110 fr.		110 fr.

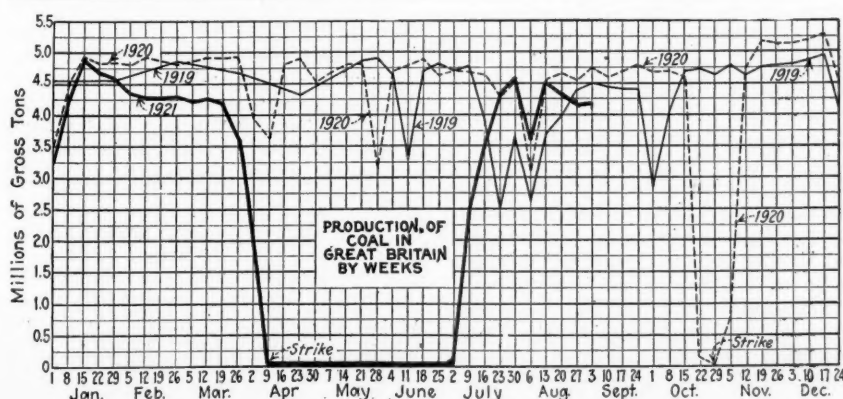
### C.I.F. Prices, American Coal

(In Gross Tons)		Sept. 10— Low Vol.	High Vol.	Sept. 17† Low Vol.	High Vol.
River Plate .....	\$10.75	\$10.20	\$11.00	\$10.20	\$10.20
French Atlantic .....	9.75	9.30	9.65	9.20	9.20
United Kingdom .....	9.65	9.30	9.65	9.20	9.20
West Italy .....	10.05	9.60	9.85	9.40	9.40
Scandinavia .....			11.60	11.15	11.15
Cuba .....	7.25	6.85			

### Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff		Sept. 10	Sept. 17†
Admiralty Large .....	33s.		31s. 6d. @ 32s. 6d.
Steam, Smalls .....	19s.		19s. @ 19s. 6d.
Newcastle:			
Best Steams .....	28s. 9d.		28s. @ 30s.
Best Gas .....	27s. 6d.		27s. 6d. @ 28s. 6d.
Best Bunkers .....	28s. 6d.		27s. @ 28s.

†Advances over previous week shown in heavy type, declines in italics.



## Reports From the Market Centers

### New England

#### BOSTON

*Slight Improvement in Prices—Marine Freights Unchanged—All-Rail Movement Light—Anthracite in Better Request—Steam Moves With Less Difficulty.*

**Bituminous**—While the current level of prices remains unchanged, there are instances of slightly firmer quotations than were reported a week ago. They would hardly be mentioned were it not for the extremely dull period we have been passing through for many weeks. At the same time it betrays slightly more interest on the part of certain small buyers. It is apparent also that the Hampton Roads agencies are less disposed to sell slack at the \$1 per net ton basis that was so freely quoted three weeks ago.

Pocahontas and New River shippers are still very actively canvassing this territory. Practically all the smokeless interests are engaged in the drive to place coal, and there is noticed a steady increase in the volume shipped coastwise. With dullness along the line of the railroads and in the West, only in the direction of New England is there any encouragement whatever for new business. There is still a tendency to send coal forward unsold, but it should be said that most of the agencies are less brash about naming low figures. Several factors here seem at last to have discovered that mere price-cutting will not of itself move coal in a market that is under such heavy pressure to sell.

As yet there is disclosed no tendency toward higher marine freights. Depending on size, barges and sailing vessels continue to be quoted 90c. @ \$1.15, Hampton Roads to Boston. It is quite likely, however, that freights will not be marked up in the near future, leaving it to the coal shippers themselves to make the first move upward, when the way seems open.

Movement all-rail remains on a light basis. The railroads are taking coal only sparingly, and the territory as a whole has been so flooded by offers of the smokeless coals from rehandling plants at New Haven, Providence, Boston, and Portland that buyers take only the remotest kind of interest in the Pennsylvania grades.

At the New York and Philadelphia piers dumpings are at a low ebb. The marine differentials operate so much in favor of movement from Hampton Roads that there is apparently as little request for tonnage to move bituminous from Philadelphia and from New York

as there is desire on the part of vessel and barge owners to place their tonnage on any basis that could reasonably be offered under present conditions.

**Anthracite**—Domestic sizes are improving steadily. Stove is actually in short supply with most of the companies, and chestnut and pea are now being moved with very little difficulty, except on the part of certain of the independents.

Somewhat to the surprise of the trade there is also a better demand for certain of the steam sizes. It is felt there will be a renewal of interest in the buckwheats if the all-rail tariffs on these sizes can be somewhat reduced.

### Tidewater—East

#### NEW YORK

*Anthracite Domestic Moves Easily—Steam Demand Improved—Bituminous Market Spotty—Local Trade Not Affected by Dissolution of Tidewater Coal Exchange.*

**Anthracite**—There are further indications that the situation has improved. Demand from the wholesaler and the retail dealer is stronger and all domestic coals are moving easily. Even though production is slower plenty of coal is being shipped to market to take care of all requirements. Salesmen are kept constantly in the field to prevent accumulation. They report most of the yards well supplied with small prospect of much increase in business until the cooler weather drives customers to the market.

Stove coal continues to lead. Chestnut is moving easier here. An occasional quotation of \$8.60 is heard for stove but the average has been around \$8.50. Pea still lags with quotations varying considerably and according to the amount of coal on hand.

The steam sizes are in a healthy condition. Demand is regular and quotations for the better coals are up to company circular.

**Bituminous**—Market conditions are disappointing. The bright features of the early part of the week later disappeared and demand seemed to be at a standstill. The trade is anxiously awaiting the increased business which they believe ought to be here soon. The discontinuance of the Tidewater Coal Exchange is not expected to cause any inconvenience here. For the past several weeks more coal has been consigned to interests outside the pools than otherwise.

Demand is spotty with not much change in prices. Consumers are not

as well supplied with coal as it was expected they would be after a summer of low prices, but it is believed the first touch of cool weather will drive in many new orders.

Loaded boats are not numerous in this harbor and quotations for them do not vary much from the mine price basis. The cheaper coals are scarce. Because of this there is comparatively little of Pool 11 to be had.

Local houses report many inquiries received and some new business but it is not up to expectations. There is little or no export activity and practically no fixtures from this market. Bunkering demand has been quiet.

#### BUFFALO

*Other Soft Coal Coming This Way—Shadow of Car Shortage—Anthracite Sluggish.*

**Bituminous**—Considerable effort is being made to introduce certain coals into this market that were formerly kept out by long distance and high freight rates. It is becoming common for this or that section to reduce the cost of mining until, so far as actual cost is concerned, the coal could easily compete with those that come in regularly. Not so very long ago there was little or no No. 8 coal selling here, but a few freight adjustments brought it in.

Until the labor problem is settled in some uniform way there will be more or less special trouble in coal, as well as other industries directly affected by it. Until it is smoothed out there is going to be slow business generally.

The car supply is still good, but certain shippers look for a shortage of large proportions before winter. The leading railroads appear to be looking for it also and are doing considerable advertising in an effort to induce the shippers to buy coal early. Prices are slack enough to provoke delay, being \$3 for Youghiogeny gas lump, \$2.75 for Pittsburgh and No. 8 steam lump, \$2.50 for Allegheny Valley mine run and \$1.75 @ \$2 for slack.

**Anthracite**—The idea that prices are to come down still prevails and the local papers help it on although they accept the money that the operators are spending in advertising to show that their profits are small. This may not be exactly misrepresenting the people, but it is surely misleading them.

The fact that profits are not high is shown by the dullness of the independent trade. These mines are now offering coal \$7.75 @ \$8, which is lower than the line prices, yet business is slow. The local demand has improved a little of late and it will of necessity continue in that way until retailers are busy again.

**Lake**—Shipments have fallen off, being for the week 35,400 tons for Duluth and Superior, 21,200 for Milwaukee, 16,000 for Chicago, 10,000 for Port Arthur, 9,500 for Sheboygan, 6,800 for Waukegan and 2,500 for Hancock; total, 101,400 tons.

**Coke**—Demand is still light, though



continued labor troubles in the Connellsville region have reduced the supply. Furnaces have not increased their activity materially, though some of them are taking an increased amount of iron ore.

### BALTIMORE

*Stronger Tone to Bituminous Market—Conditions Still Unprofitable—Anthracite Consumers Being Fed with Misinformation.*

**Bituminous**—Trading which for the past ten days has shown a stronger tone is still operating on a more or less unnatural and demoralized basis. Some of the operations having headquarters here report that they are unable to market their product, largely because they are in a high wage scale district, and are buying for distribution in the open market while keeping their own operations closed. The situation as a whole means that Pennsylvania R.R. coal for the most part is higher than either B. & O. or Western Maryland fuel.

Then again there are Pennsylvania operations which are offering the highest class at \$2.25@ \$2.40. This is explained by the fact that these operations are required to maintain a working force and are able to sell even at a slight loss because it helps to defray actual necessity operation cost.

In such times of keen competition as this there is naturally a line of individual selling that is way off-color. For instance, one shipper caught at Tide with considerable Pool 34 was being charged with a demurrage cost of about \$2 per car per day, was hawking the same around the trade as low as 50c. a ton and freight rate.

**Anthracite**—The situation continues to grow more and more unsatisfactory. Householders refuse to buy and the flow of coal to Baltimore has dwindled to such an extent that the shortage here will soon be around 120,000 tons, or two months normal supply.

Meanwhile the paper which stirred up the trouble for the retail coal men and caused purchasers to hold off buying because they thought they were to get lower priced coal this winter, is printing a lot of bunk about the possibility of a great rush about "river coal dredged from the bed of the Susquehanna" and which is supposed to get on the market through a newly organized concern at prices that will knock the spots out of things.

### PHILADELPHIA

*Moderate Anthracite Buying—Some Cut on Pea—Steam Coals Dull—Bituminous Displays Some Betterment—Prices More Firm.*

**Anthracite**—September business thus far accomplished is far below the hopes of retailers. They now anxiously await the first frost as the next mile-post toward real business.

Yards continue to maintain their capacity stocks and producers actually are having less difficulty than usual to

move their production, with pea, of course, excepted. Despite this condition, the lowest price on pea coal recently has been around \$5, and this figure, even though it usually covers a doubtful grade of coal, has given certain retailers an opportunity to quote publicly a low delivered price, some being as low as \$10.25. This has led some dealers to shade prices 25c.@ 50c. on stove and nut.

Steam coal cannot be reported as improved, as the size in best demand—buckwheat—is only being taken moderately, with rice and barley almost uncalled for. The big storage yards of the companies are showing heavier piles each week of all steam sizes.

**Bituminous**—It can at least be said that with the middle of the month passed the outlook is somewhat better. Numerous shippers report greatly increased inquiries and the percentage of business accruing therefrom is considerably higher. Consumers seem to be trying to get under cover for a fair portion of their winter requirements, and it has not been unusual of late to find a buyer who asks for a price to be protected over a period of two or three weeks. These previously had contracts and as they have not stocked up are now endeavoring to get ahead.

Recent buying has been confined to the best grades and while quotations have not raised very much, and in some cases not at all, yet it has a tendency to firm up the ruling market prices and would seem to indicate an increase by the first of October.

Industrial conditions seem to be better, as all of the furnaces under way are still operating and while they report light business in sight, they admit the receipt of occasional new orders.

The Tide trade is almost only a memory. Bunker business is also very light, with considerable competition for all that offers.

Nothing has developed in the contract situation, and the consumer without agreement still is of the opinion that a contract for the balance of the season at present quotations is of no particular advantage.

### Canada

#### TORONTO

*Business Continues Quiet—Anthracite Stove Scarce—Some Improvement in Demand for Slack.*

Trade continues light for the season, as most domestic consumers are still holding back and buying only for present requirements. Dealers are carrying large stocks of all grades except stove, which is the kind most in demand and is increasingly scarce.

Bituminous is selling slowly as most of the coal-using industries are very quiet, but there is a slightly increased demand for slack, though not sufficient as yet to affect the price. Quotations are as follows:

Retail:	
Anthracite egg, stove, nut and grate.	\$15.50
Pea.....	14.00
Bituminous steam.....	11.00@11.50
Domestic lump.....	12.25
Cannel.....	16.00
Wholesale f.o.b. cars at destination:	
1-in. lump.....	7.75@ 8.50
Slack.....	6.00@ 6.75

### Northwest

#### MINNEAPOLIS

*Chilly Weather Stimulates Business—Dock Trade in Better Shape—All-Rail Hard Hit.*

A touch of chilly weather has been sufficient to start retail orders coming in a little faster and has served to stimulate orders from dealers. A good tonnage is now moving from the docks into the interior.

With this movement, comes a relief at the docks, since it makes room for the coal still to arrive. The movement has already begun to decline, due to vessels being taken off the coal business for various reasons. It seems quite probable that there will be a sufficient tonnage on the docks, even with reduced movement for the remainder of the period of navigation. The requirements of the season are unlikely to be as heavy as in more active years.

The all-rail supply, while slow in moving forward, is likely to be of a considerable tonnage. It will probably be cut down somewhat from the fact that some of the business of past years which went to all-rail shippers, has this year been closed by contract to dock concerns.

Just now, things are proceeding in something of a routine manner. There is little difficulty in transportation circles. Cars are in ample supply and there is no heavy rush of traffic to make any trouble.

Railroad men have been grumbling about the reduced wage schedule and have been voting on a strike order. In local railroad circles, it is understood that the vote has been strongly for a strike. But unless this does occur, the weather is likely to be the sole cause of activity or otherwise in the coal game in the Northwest.

#### MILWAUKEE

*Improved Demand—Coke in Liberal Supply, but Strongly Held—Lake Receipts Decline.*

There is a decided betterment in the demand for fuel from all sources. A much heralded cold wave caused a general survey of empty bins, and a consequent mild rush to cover. The situation was aided by the receipt of a goodly amount of stove size anthracite, the scarcity of which has been hampering retail deliveries. However, because of the high price of coal and the unemployment situation, there will be more "hand-to-mouth" deliveries in the coming winter than ever before.

Shipments to the interior show a satisfactory improvement. There was never as much coke on hand in Mil-

waukee as at the present time. Nevertheless, the Solvay people hold their product at \$15 per ton for domestic sizes. Gas coke is being advertised at \$12.50 for nut sizes and \$11 for small nut.

Lake receipts thus far during September have slackened up considerably. Seventeen cargoes in all have been received, aggregating 55,000 tons of anthracite and 80,938 tons of soft coal.

September prices of anthracite and bituminous, prevailing in Milwaukee, are shown in the following table, compared with those for the same date last year. These prices are subject to an additional 75c. carrying charge where the coal is carried in. The striking feature of the yearly comparison of these prices is that anthracite quotations, which cover the retail domestic trade, are uniformly higher this year than last while the bituminous steam prices are materially lower than those prevailing in September, 1920.

Anthracite	Sept. 17, 1920	Sept. 17 1921
Egg.....	\$14.80	\$15.85@ \$15.95
Stove.....	15.05	16.10@ 16.20
Chestnut.....	15.05	16.10@ 16.20
Pea.....		14.35@ 14.45
Buckwheat.....	11.50	12.10
Bituminous, steam trade—		
Yough. and splint lump...	12.50	8.00
Yough. and splint mine run	11.50	7.25
Yough. and splint screen-		
ings.....	10.00	6.25
Hock. and Pitt. lump....	12.50	7.75
Hock. and Pitt. pile run...	11.50	7.00
Hock. and Pitt. screenings	10.00	6.00
Poca. lump, egg and nut...	15.25	13.25
Poca. mine run.....	12.00	8.50
Poca. screenings.....	11.00	7.25
Ill. and Ind. lump.....		8.00
Smithing.....	13.00	9.00

#### DULUTH

*Better Interior Movement Makes Room for Continued Receipts—Prices Firm—Transportation Conditions Are Excellent.*

Despite indications of decreased shipments from lower ports, coal continues to arrive here in a volume which is only slightly less than heretofore. Last week twenty-eight cargoes came into port of which eight were anthracite and ten are reported on the way of which three are hard coal.

The needs for the winter in bituminous have been filled several weeks ago and anthracite would be sufficient if it continued coming in the quantities which have been recorded in the past two months. It is felt that docks with mine connections are sending coal to the Head-of-the-Lakes so as to have a supply on hand in the emergency of a possible strike of miners next April.

Shipments from the docks here to points throughout the Northwest have gained appreciably in the last week and are now promising to more than take care of the inflow to the harbor. Officials of one dock claim that anthracite is going off their dock as fast as it comes in, but the general report is that hard coal is still slow although picking up. The movement in bituminous is encouraging.

Railroads are in excellent condition to handle a large volume of coal and shippers report that never within the past six years have cars been received

so quickly at sidings for loading, and been hauled out so soon after loading. An increase of 50c. in Pocahontas has been made. General hardening of soft coal prices is evident. Screenings are \$4 with no sellers below that figure and lump and run of pile are firm at \$7 and \$6.25. Pocahontas is now \$10.

### Inland West

#### CHICAGO

*Industries Hammer Steam Prices — Seasonal Domestic Call—Smokeless In Distress.*

All spring and summer the big buyers of steam coal have had bargains offered to them, in short, they have been pampered. These buyers believe, now that there is a better domestic demand, they will be able to buy steam coal at even lower levels than heretofore; consequently, they are holding back and letting the operators bid against each other. In Chicago proper prices on screenings have slumped very badly. What little mine run has been coming has also been sold at a sacrifice. Most of the industries have enough coal on hand to take care of immediate needs, but should there be a general revival of business they would find themselves short of coal.

There is a seasonable demand for 6-in. lump coal. Chicago dealers are getting a little foretaste of what is to come, as practically all of the operators are oversold on the lump size. They have, however, plenty of furnace and small egg to offer, but the dealers do not want this size, and will not take it unless forced to. The fact that any coal is scarce at this time is proving to be considerable of a surprise to the retail trade.

There was some price cutting on smokeless this week as it was quite possible to buy high grade Pocahontas lump as low as \$4.50 at the mines. Smokeless mine run is being sold as low as \$2.40. This price, however, does not apply to "distress coal" which has had to be moved at lower figures.

Some of the best informed sales agents are openly predicting that the demand for domestic coal will be extremely short this year; in fact it has been said that the retailers will have on hand all the coal they want for the winter months by Nov. 1. It must be borne in mind, however, that the retailer has been buying very little coal all summer and so far this fall.

#### COLUMBUS

*Better Domestic Demand — Steam Trade Still Slow and Screenings Extremely Weak—Prices Are Unchanged.*

Retailers have been having a good run of business and with low stocks have been compelled to enter the market. This is especially true in the city districts. Farmers are still too busy to look after their fuel supply, but better buying from agricultural sections is expected soon. The tone of the trade

has improved to a certain extent and it is now believed that the worst of the slump is over. Retail prices are holding firm in all sections.

There is little demand for steam and this is one of the drawbacks to a more active domestic trade. Public utilities are about the only big buyers for the small sizes and these are not sufficient to absorb the increasing supply. Manufacturing is slow in resuming and little is expected from that source for some time.

Lake trade is not brisk and Ohio mines are about stopped on their orders. Shipments from the lower ports are gradually being reduced.

It is believed that not a great deal of tonnage will be shipped from Ohio to the Northwest during the remainder of the season.

#### ST. LOUIS

*Some Domestic Activity—Steam Conditions Show No Improvement—Lump Prices Are Advancing.*

There is a little domestic improvement principally on the cheaper grades of coal. Mt. Olive is in the lead. Last week a large tonnage of coke, approximately 100 tons a day, was being delivered to customers who in the past had been using Carterville coal for the most part.

Locally steam is slow. There is no activity and nothing to indicate that conditions will show any improvement as yet. Here and there a little coal moves in storage, but it is small.

Country domestic orders show improvement. Country steam conditions are not promising except to the extent that there will be a good demand later and coal may be hard to get.

On account of the inability to move steam, lump coal is a little bit scarce and operators are inclined to advance prices. Some operators are accepting lump orders only when accompanied by orders for nut and egg.

An advance of 25c. per ton has been announced by one or two of the larger retail dealers, effective Sept. 20.

#### CINCINNATI

*Smokeless in Distress—Fall Business Grows—Retail Prices Firm and Mine Quotations Hold.*

The steady grind of fall business was apparent this week with few price changes but a much better flow of orders and inquiries. River business also has been picking up. Though smokeless prices have fallen in the wholesale market no effort has been made by retailers to reduce their quotations.

Bituminous mine run business was better. Prices still remained \$1.60@ \$1.75 for spot Kentucky offerings and \$1.75@ \$1.85 for West Virginia. Slack sagged with the re-entry of Logan County and other West Virginia trouble centers resuming. A price of \$1@ \$1.25 ruled on southeastern Kentucky and \$1.25@ \$1.35 for West Virginia. Lump and block went forward in fair volume at \$3@ \$3.50 for Kentucky and West Virginia selling down to \$2.75 for



spot and up to \$3.50 for well-known brands.

The slump in smokeless prices still continues, some No. 3 Pocahontas going as low as \$4.40, although quotations range \$4.50@5, egg can be bought around \$4 and nut \$3.25@3.50. Mine run is variously priced and can be bought at \$2.75 or a trifle lower. Slack ranges \$1.50@2.25.

Warmer weather of the past few days has again cut into the retail business, bringing it back in the ruck. Smokeless lump is quoted at \$9.50, mine run at \$7.75 and slack \$6@6.50. Bituminous lump is \$7.75@8.25, mine run \$6.75 and slack \$5.

#### DETROIT

*Little Demand for Steam or Domestic—Receipts Are Small—Anthracite Trading Slow.*

**Bituminous**—Neither steam nor domestic bituminous is in active demand. Some say steam inquiries are more frequent but the volume of sales shows no material improvement.

Among some of the buyers there is apparently an expectation that coal will be obtainable at a further price reduction after the close of the Lake season. Developments so far fail to support this theory. Shipments to Detroit have not increased, and instead of attempting to force their output on an unreceptive market, the mines are said to be offsetting reduced Lake shipments by curtailing production.

Three-inch lump from Ohio mines is quoted \$3.25, 2-in. is \$3, egg is \$2.50, mine run is \$2, and nut and slack \$1.35. Four-inch splint lump from West Virginia is offered at \$3.25, 2-in. at \$3, egg at \$2.50, mine run at \$2, nut and slack at \$1.50. Pittsburgh No. 8 three-quarter lump brings \$2.40, mine run \$2.10, nut and slack \$1.65. Smokeless lump and egg is \$5, mine run \$2.90, nut and slack \$1.60.

**Anthracite**—Buying by household consumers is not proceeding in a way to impress dealers with a feeling that winter requirements of their customers will be supplied. While demand is strengthened by a few days of chilly weather, interest immediately lags when temperatures become warmer.

#### CLEVELAND

*Lake Shipments Tumble—Industrial Consumers Still Cautious—Coal Receipts Lower.*

The coal trade continues to take a keen interest in industrial developments in this district. Buying has improved slightly but it has not measured up to expectations which were based upon reports of more activity in the steel mills and other lines. Some steel mills and various other plants have moderate stocks, due to the many weeks of curtailed operations. Interests thus situated are not in the mood to buy beyond present needs to any great extent until future developments in their respective lines become more clearly defined.

While not making any positive pre-

dictions a number of leaders believe that a coal famine is not impossible, in the event buyers suddenly decide to rush into the market. They cite as a precedent the recent violent advance of the cotton market, that came when buyers realized the crop was short and that stocks were low. No price changes have been announced in the last week, although slack is showing weakening tendencies.

With more than 17,000,000 tons of coal now shipped to the Northwest, the movement has taken a drastic slump. This business is in sharp contrast with last year when every energy was being strained to prevent a coal famine in the Northwest. Since it is not expected that more than 20,000,000 tons will be sent to the upper docks this season, it is seen that less than 3,000,000 tons remain to be moved. As a result, the season will drag to a normal close with dwindling shipments each week.

Bituminous receipts for industrials and dealers for the week ended Sept. 10 were 727 cars divided; industrial 504, retail 223 cars. This represents a decrease of 100 cars under receipts of the previous week.

### South

#### LOUISVILLE

*Eastern Kentucky Operators Endeavoring to Raise Domestic Prices—Demand for Steam Coal Slow—Very Little Improvement Shown.*

Eastern Kentucky is endeavoring to increase prices 25c., due to near approach of larger business, and trouble in securing the kind of cars that are needed for shipping prepared coal to retailers and general grades to consumers who have no unloading equipment for hopper bottom cars. The slow demand for screenings is also having something to do with the effort to advance the price on prepared.

It is reported that the L. & N. is enforcing more rigidly its rule relative to cars loaded and not billed out, counting such cars against the next day's mine supply. It is claimed that this is an injustice in view of the fact that the road fails to supply the class of equipment asked for, with the result that the operator is not able to bill out all loads immediately.

Nut and slack is very draggy due to slightly better demand for prepared. Steam grades are weak in price, mine run having held up, but screenings are quoted 15c.@25c. lower. Western Kentucky fuels are rather steady in price.

#### BIRMINGHAM

*Steam Market Unstable—Domestic Sizes Hard to Move—Production Due to Increase With Resumption of Furnace Companies.*

There is little or no change for the better in market conditions. There is some intermittent buying in the spot market, sales being fairly active one day followed by a dull trade for sev-

eral succeeding days, there being no semblance of a steady demand as yet.

The completion of the reserve oil stations of the Government at Mobile has perhaps served to cut off part of the requirements of this port, as vessels with provisions for both oil and coal fuel have chosen the former at the present low cost. Quotations remained stationary.

The domestic movement from the mines is restricted by the slack demand from dealers. Inquiry from without the immediate district is said to be slightly better, but trade conditions as a whole are very unsatisfactory. Wagon mines are placing considerable domestic coal direct to cellars of the consumers in the vicinity of Birmingham and coal is also being purchased in car lots by consumers to a greater extent than heretofore.

Production is now perhaps 65 per cent of normal. Several furnaces are due to be placed in blast in the next few weeks and preparations are being made to resume operations at some of the larger mines of the furnace companies.

### Southwest

#### KANSAS CITY

*Domestic in Good Call—Sluggish Steam Market Hampers Production—Better Outlook.*

Light demand for screenings holds back production of domestic sizes and working time has not been materially increased the past week. Local consumers are buying more freely and country dealer trade is sending in orders for prepared sizes which necessarily have to take their turn in being filled.

Reduction of 28½c. in freight rates from southern Kansas fields promises some additional business. There is a better outlook for screenings ahead due to early expiration of oil contracts which cannot be renewed on the basis of original oil prices.

No immediate changes in prices on Kansas, Missouri, Arkansas or Oklahoma are likely but another 30 days promises an advance in all these fields if pressure of orders necessitates further sacrifice on screenings.

### West

#### DENVER

*Strike Called Off—Operations Resume—Investigation of Wage Conditions.*

Operation of the mines of the Colorado Fuel and Iron Co. located in southern Colorado has been resumed. The 1,000 miners who walked out Sept. 1 in protest of a contemplated wage reduction, amounting to about 30 per cent, returned Sept. 12 after the Colorado State Industrial Commission held a preliminary hearing and ordered a restoration of the old wages pending a

full investigation of the whole matter.

The state law requires a 30-day notice where wages are affected or in case the men go on strike. The miners' union claimed a violation of this clause, the company contending that the miners agreed to the proposed cut in order to get more days' work.

E. H. Weitzel, manager of the com-

pany, declared that the proposed wage reductions would permit the company's steel plant to reopen; that it would make the cost of coal lower for the public, and would make more earnings for the miners, who, he said, would be able under the reductions to work more regularly, as coal production would be stimulated.

## News From the Coal Fields

### Northern Appalachian

#### PITTSBURGH

*Demand Fails to Reflect Favorable Influences—Traffic Troubles Feared—Gas Slack Higher.*

The market shows practically no response to several influences that should be considered distinctly favorable, including greater activity in the steel industry, some increase in other industries, and the progress of the season, which normally would bring a decided increase in demand for domestic coal at this time. Nor can it be said that there is a decided increase in demand without the Pittsburgh district feeling it on account of demand going to the non-union districts, for the Connells-ville region has seen little improvement in coal demand, and any considerable increase would cause an overflow into the Pittsburgh district.

There continues to be a fair demand for gas coal, and prices are a shade better, particularly in slack, while recently there was a surplus of gas slack, causing it to go practically at steam slack prices, say at \$1.75, when steam slack brought about \$1.65. Gas slack now easily commands \$2 and some sales have been made at \$2.25.

Prices on steam coal are largely nominal or asking prices, while in gas coal there is a definite market.

#### CONNELLVILLE

*Labor Situation Cleared, With Most Independents Advanced—Demand Slightly Better—Production Unchanged.*

The labor situation among the independent operators is now fairly well cleared. The majority have advanced to the Frick scale of Aug. 1 and the remainder will probably do so. The Rainey interest, which had undertaken a reduction from the July 1 scale has advanced at several coal mines, which supply the Rainey-Wood byproduct plant in the East, to the Frick scale, and it is understood will shortly do the same at coke works whose product has been sold. The understanding is that the Steel Corporation has no intention of touching the Frick scale this year.

Market demand for coke has increased somewhat. The Wickwire-Spencer Steel Co., Buffalo, is understood to have bought 10,000 tons of

prompt at \$3.25. Recently the Shenango Furnace Co. bought some prompt coke and also made a short-term contract, at about \$3 in each case, but such a price could not be duplicated now. Some small lots of furnace coke have been sold to jobbers at \$3.25, the jobber adding his margin. The A. M. Byers Co. is negotiating for coke to start its furnace.

Prices have been trending upward in the past week, but with a clearer labor situation may not go much farther. We quote: Spot furnace, \$3.25@ \$3.40; contract, \$3.25@ \$3.50; spot foundry, \$4.25@ \$4.50.

The *Courier* reports production in the week ended Sept. 10, at 12,100 tons by the furnace ovens, and 26,170 tons by the merchant ovens, making a total of 40,270 tons, an increase of 910 tons.

#### UNIONTOWN

*Coke Industry Shows Decided Betterment—Prices Up and Operations Resumed—Coal Market Still Backward.*

Conditions in the Connells-ville coke region took a decided change for the better last week. The outstanding developments were: Acceptance by all independent operators of the Frick scale of November, 1917, having a base of \$2.29 per 100 bushels of pick mined coal. A decided stiffening in the market price of coke with quotations firm at \$3.25@ \$3.50 and the possibility that a range of \$3.50@ \$3.75 will appear shortly. Resumption of operations at the Garwood plant of the Aetna Connells-ville Coke Co. following the receipt of a contract of 5,000 tons of furnace coke for the remainder of the year at a price around \$3.25 per ton. Resumption of operations at the Leisenring No. 1 plant of the H. C. Frick Coke Co., one of the largest plants in the region, after a suspension throughout the summer.

Posting of notices by the W. J. Rainey, Inc., that the Frick scale would be put into effect with the resumption of limited operations ended the labor trouble in the region which had its origin when the Rainey company sought to reduce wages another ten per cent.

The resumption of the Leisenring No. 1 plant is considered more than usually significant. Throughout the period of depression the corporation has operated its mines fronting the Monongahela River because of the easy ship-

ping facilities to the Clairton byproduct plant.

The need of the corporation now for tonnage apparently has increased to the extent that the mines further in the interior are to be called upon and the announcement of the Leisenring resumption was quickly followed by reports that other mines shortly would be put into operation.

The coal market is backward in reflecting the optimism of the coke trade. Sales continue to be sluggish and the market is faced with a persistent price resistance. Sales are few although there is a demand for slack which cannot be satisfied because of the difficulty in disposing of the three-quarter size. Steam coal is quoted \$1.50@ \$1.60 with byproduct at \$2.

#### UPPER POTOMAC

*Demand Fails to Revive—Mine Idleness Grows—Operators Out of Spot Market.*

No new market developments were observed during the week ended Sept. 10. Most of the mines along the Upper Potomac have been shut down since the beginning of the year and as a result of the protracted idleness, there is now some suffering among the miners. No spot business was available because producers were unable to meet the prices of nearby non-union fields with their lower production costs.

#### FAIRMONT AND PANHANDLE

*Outlook Poor As Orders Fail to Materialize—Spot Market Sluggish—Lake Demand Subsides.*

##### FAIRMONT

With the Labor Day idleness and the little demand, production touched its lowest point for the year during the period ended Sept. 10. Only 76 mines out of 301 in the Fairmont region were operating even part-time. The outlook for September was gloomy as inquiries were being reduced and orders were almost entirely lacking. Little or no coal was moving to Tidewater.

##### NORTHERN PANHANDLE

Under the pressure of poor demand the output was being forced downward. Only a minority of mines were in operation producing a small tonnage for Northern and Western markets. The Lake demand had entirely subsided and spot business was extremely scarce. No satisfactory progress was being made in closing contracts.

#### EASTERN OHIO

*Holiday Affects Production—Lakes in Continued Slump—Industrial Situation Improving Very Slowly.*

Production for the week ended Sept. 10, was 295,000 tons, or about 56 per cent of the rated capacity of the mines for the five-day week. Owing to Labor Day, the output was some 50,000 tons less than the preceding week, but the daily production was over 1,000 tons in excess. The field has produced during the calendar year, 12,116,000 tons, which is approximately 53 per cent of capacity.



Railroads are taking more coal, both for immediate requirements and for storage, and reports indicate that at the present rate of production at least 40 per cent is going to the carriers for fuel. The public utilities are also storing coal in anticipation of their needs during the winter.

Shipments of Lake coal continue to decline and operators feel that the district will have difficulty in maintaining production on the same scale as during the past few months, as the demand from other quarters is not of sufficient magnitude to offset it. The daily accumulation at the lower docks is running less than 8,000 cars, and dumpings around 1,600 cars.

While Ohio's industrial situation is improving, it cannot be said that it is reflected to any considerable degree in the demand for steam coal, as the market continues very dull and both spot and contract inquiries are negligible. Likewise, there has been some softening in prices.

#### CENTRAL PENNSYLVANIA

*Production Slightly Heavier—More Inquiries—Some Mines Resume.*

But little gain has been made in production during September over August, the first five days' production being 10,797 cars, as compared with the same period in August of 10,002 cars. This small gain has been maintained up to the present time. Operators are receiving more inquiries now than at any time since the depression set in.

For the first time since April 1 Stineman No. 2 mine at South Fork, one of the largest operations in the district resumed operations, on Sept. 12. No. 4 resumed two weeks earlier. Argyle Nos. 1 and 2 and the Riverside, Sunshine and J. C. Stineman mines have all resumed on part time and the miners are confident that better times are ahead. The South Fork district has been exceptionally hard hit.

T. H. Watkins, chairman of the board of directors of the Central Pennsylvania Coal Producers' Association, will be one of the speakers at the American Mining Congress in Chicago on Oct. 17-22. This will be an important meeting and will deal with the problems growing out of the meeting of the U. M. W. at the convention which convened in Cleveland Sept. 20.

### Middle West

#### MIDWEST REVIEW

*Domestic Demand Not So Active—Steam Market Quiet but Outlook Improved—Labor Situation Better.*

On account of the continued warm weather, there has been a mild decrease in the demand for domestic coal. This does not mean that there is no call, but the demand today is not as strong as it was a week ago although it is much stronger than it was back around the middle of August.

The steam market continues in the doldrums. The industrial outlook is much brighter than it has been at any time this year, but, at the same time, the improvement which has taken place has been so recent that the effect of it has not been felt as yet in the coal market. Owing to the increase in the demand for domestic, the steam tonnage has increased, and there has been some slight weakening of the market. One or two spot sales of good southern Illinois coal were made on the basis of \$1 a ton. In the Indiana fields prices have been holding a little better as the lowest price we have heard quoted this past week on Indiana fourth vein screenings has been in the vicinity of \$1.25 with some operators holding firm at \$1.50.

The Middle West is still receiving large quantities of Eastern coal, but the bulk is of the smokeless variety. Block coal from West Virginia and Kentucky has been holding firm. This is because one or two of the larger dock companies who have been holding back all summer, have decided at this late hour to come into the market and purchase a few cargoes. These have been of such magnitude that they have absorbed the lump coal for the past few days from some of the better known producing fields in both West Virginia and Kentucky, especially the latter.

The labor situation is a little more favorable than it has been during the past month. In Indiana where some serious disturbances were experienced a few weeks ago, the situation has completely cleared up, as the last mines affected by the labor trouble have been reported as working since Monday. In Hardin County where fluorspar is produced, the differences between the operators and the miners have been adjusted for the time being. During the early part of the disturbances, in view of the fact that the fluorspar miners had very aggressive support from the coal miners from the Harrisburg field, it was thought that disturbances might spread; but all danger of this has passed away.

#### SOUTHERN ILLINOIS

*Domestic Demand Good—Steam Still Lagging — General Conditions Not Much Improved—Prices Unsatisfactory.*

The Carterville field presents a peculiar condition at the present time. There is an unusually good demand for lump coal, with nothing at all for the other sizes, with the exception of egg. In other years when the demand for lump became good, it correspondingly brought egg and nut with it.

In the Duquoin field, as well as Jackson County, some improvement is noticeable in working time. Prices are coming closer to the association figures in the Carterville field, but steam is very hard to move and railroad tonnage is light. Average working time is three days.

Mt. Olive shows very little change.

There is, however, more working time and a stronger demand for domestic coal. There is very little steam business in any direction. Country price on domestic is \$3.75. The city price is \$3. Screenings on the open market range about \$1. The railroad tonnage is good from this district.

The Standard field is still working along on the ragged edge of production cost. Screenings are down to 60c., 2-in. lump is selling \$2.10@2.25 and 6-in. lump \$2.75@3, with steam nut as low as \$1.75 and egg from \$2 up.

The steam market seems to hold back everywhere. There is no movement and if there were an increased demand for lump it would necessitate a higher price and the dumping of screenings.

Most of the tonnage moving now is going to the country for domestic. Railroad coal shows little improvement. Movement of loads and empties is slowing up.

#### WESTERN KENTUCKY

*Production Is Light, but Prices Fairly Well Maintained—Industrial Concerns Behind on Contract Consumption.*

Mines are maintaining prices in spite of the fact that many are running less than two days a week, and the only full-time mines are shipping railroad coal, or in cases where heavy contracts are held. Screenings are a little weak, and some stock sold as low as 95c. during the past week. Some industrial concerns are far behind in taking contract fuel, resulting in mines having to go out in the open market in search of business to take care of this slump.

Although the coal traffic bureau since 1917 has added through rates to 7,784 points, the members have not developed their selling organizations to take care of the newly opened districts as yet, resulting in no great improvement in business traceable to the larger sales field.

However, it is noted with interest that more coal is now moving to the Northwest, while Southern business has been fair. Arkansas movement under the new rates should be good, and prospects are for very fair late fall business in Central Freight Association territory.

### Middle Appalachian

#### LOW-VOLATILE FIELDS

*General Dullness Prevails—No Tide Movement and Western Markets Hardly Absorb Offerings—Lake Trading Quiet.*

#### NEW RIVER AND THE GULF

New River mines suffered the usual loss of production because of Labor Day during the week ended Sept. 10. Tidewater buying was almost completely at a standstill, with prices around \$5 per gross ton, f.o.b. piers. Spot shipments to Western markets were heavier but were limited for the most part to prepared sizes.

Slim production at Winding Gulf operations was due to the general dullness prevailing at Tidewater. Few spot sales were made and contract business had to be relied upon in order to run. However, more Tidewater tonnage was going from this region than from New River.

#### POCAHONTAS AND TUG RIVER

Pocahontas production reached the lowest point for the year during the early part of September, not being over 30 per cent with no market losses reaching almost 340,000 tons. Contract shipments were materially curtailed and little or no Tidewater coal was moving. Slack was a drug on the market and dropped to as low as \$1, while prepared sizes were also weaker.

Instead of improving, Tug River production declined even further. There was virtually no market for spot coal except in the lump sizes and slack could hardly be moved at any price. Tidewater business was at a standstill and a minimum was going to the Lake. Companies experienced difficulty in securing equipment even for the small amount of coal they had on orders.

#### HIGH-VOLATILE FIELDS

*Labor Day Idleness Fails to Cause Loss of Marketable Production—Western Domestic Business Improves—Outlook Slightly Better.*

#### KANAWHA

During the week ended Sept. 10 most of the miners who had joined the army of invasion against Mingo had returned

to work, but the week's output was small because of the Labor Day idleness. Market conditions did not make for a large production, although steam demand was increasing encouragingly.

#### LOGAN AND THACKER

Considering what the Logan region had been through during the preceding week and because of the holiday, an excellent showing was made by Logan mines. Industrial and domestic sales were gradually increasing, which enabled several producers to resume work after a long suspension. Western shipments were in fairly large volume but there was no Tidewater movement.

Poor markets precluded larger operations in the Thacker field, but production was not under 40 per cent with much of the coal going to the railroads. There was an undercurrent of optimism in evidence with the belief that business would be materially improved before October.

#### NORTHEASTERN KENTUCKY

There was no perceptible change in market conditions, prepared sizes being the only coal in demand. This, of course, weakened the demand for steam coals and it was becoming increasingly difficult to market them.

#### VIRGINIA

Approximately 80 per cent of the mines are not being operated and the prospects are for a further reduction in output because of the poor market. Activity was more marked along the mines on the Interstate and the C. C. & O. than on other roads in the region.

## Southern Appalachian

### SOUTHEASTERN KENTUCKY

*Steam Market Quiet—Domestic Heavier—Tennessee Mine Closings Bring Orders—Prices Firm.*

While there seems to be little change in the steam market, except, perhaps, more strength in nut and slack, block is moving better than at any time during the depression and not a few of the larger operations are sold up for the balance of the month.

The present spurt in the market may be due in part to the closing down of a number of mines in eastern Tennessee, the trade ordinarily furnished from these shifting their business to eastern Kentucky. It is understood that these mines will start up again Oct. 1.

## West

### UTAH

*Business Lacks Usual Fall Snap—Industries Barely Stirring.*

The volume of business being done is nothing like that which was expected by this time. The price disturbance of a few weeks ago is believed to be largely responsible for consumers withholding their storage orders. The general public still believes that prices are going to fall before the cold weather sets in.

### ILLINOIS

Alexander Eisenstein, president of the Fidelity Coal Co. of Chicago, who has been through Poland distributing relief funds, returned on the Savoie, recently.

A new coal company has been organized and a mine has opened north of Kewanee. It is called the **Eagle Coal Co.** and is operated by Carlson, Reiff and Sons. Dumps and all mine equipment have been installed.

The Williamson County Board of Review of Assessments has increased the total assessed valuation of the mines in that county approximately 30 per cent. The most notable change made was the reduction of the **Sanford Coal Co.** from an assessed valuation of \$400,000 to \$100,000. However, the others were all given a boost.

M. T. Anderson, of the Logan Coal Co., and formerly of the Chicago, Wilmington & Franklin Coal Co., has accepted a position with the Union Colliery Co., and will be located in Chicago.

The Taylor Coal Co. is making extensive improvements at its mine at Freeman in Williamson County. The company is expending about \$200,000 in various improvements.

A suit has been filed in the circuit court at Benton, in Franklin County, against the **Southern Gem Coal Corporation**, which operates what is known as the "west" mine at West Frankfort, asking that an injunction be issued restraining the company from operating its mine in its accustomed manner. The suit is brought by a school district, the Union Hospital and about fifty residents in the vicinity of the mine, alleging that the huge volume of smoke and offensive gases issuing from the mine cause much annoyance and jeopardizes the health of the citizens and the children attending the school.

The **Willisville Coal & Mining Co.**, of St. Louis, operating seven mines in Illinois, recently completed the concreting and enlarging of the main shaft of the Gulf mine operated at Sparta. Construction of a large concrete tippie over the main shaft is also being completed.

## News Items From Field and Trade

### ALABAMA

The **Bonnie Coal Co.** has been incorporated in Bibb County with a capital stock of \$15,000 and has opened a slope mine near the Bibb-Jefferson County line between Eoline and Blocton. William Jones, of Tuscaloosa, is the principal promoter of the new development.

G. St. J. Perrott, associate physical chemist of the United States Bureau of Mines Experiment Station, Pittsburgh, Pa., is to be sent to Birmingham, Ala., to study the physical properties of coke in relation to its production and use in the blast furnace.

The **Daniel-Duffee Coal Co.**, recently organized, will operate coal properties in the Birmingham section. Robert L. Daniel is president and C. G. Duffy, secretary and treasurer.

The **Alabama Fuel & Iron Co.**, of Overton, are reported by the *American Machinist* to be in the market for coal mine hoists and pumps. The **Woodward Iron Co.** of Birmingham, are contemplating the purchase of two electric mining locomotives, storage battery type.

### ALASKA

Reports to the Interior Department indicate that the Navy Coal Commission has been doing considerable development work in mining coal in the Chickaloon field during the year. A number of buildings have been constructed in the establishment of a permanent mining camp, including a hotel, a power house, an office, a hospital, a first-aid building and cottages for employees. Prospecting for coal has been carried on at Coal Creek, Gravel Creek and Kings

River in the same general field. Development, however, has been difficult on account of extensive faultings and foldings of beds and the presence of intrusive rocks. At Eskka the Alaskan Engineering Commission has produced about 200 tons a day for railroad use this year. In the Nenana lignite field between Seward and Fairbanks on the government railroad under government leases the **Healy River Coal Company** has been mining 50 tons a day for domestic use in the vicinity of Fairbanks. Two small mines were operated in the Broad Pass District under government leases, about 1,000 tons having been produced from each mine, most of the coal being used for domestic purposes.

### COLORADO

W. A. Ream has been appointed general manager of the Colorado Collieries Co., successors to the Western Collieries Co. with offices in Denver.

Coal mining on a limited scale on leased government lands by community organizations and small developers has been made possible through Chief M. D. McEniry of the Denver field division of the United States general land office in Denver in obtaining a reduction of the bonds required by the government of coal mining operators. The bond for \$15,000 formerly required was termed excessive and prohibited small-scale mining. A new amendment to the coal mining regulations pertaining to government lands provides a bond equal in amount to one-half of the investment for development when that investment is less than \$10,000, but in no case shall the bond be less than \$1,000.



The City of Murphysboro has notified the **Gartside Coal Co.** that the coal company will be held for damages that may occur to the subsiding of the surface on North Fourteenth St., and also for any other damages that may result therefrom. Considerable private property in Murphysboro is also showing signs of sinking.

The **Ridge Coal Mining Co.** has decreased its capital from \$300,000 to \$150,000.

## INDIANA

Fire of undetermined origin partly destroyed the largest washhouse at the **American No. 1 coal mine**, two miles south of Bicknell, recently. Workmen repaired the damage and the miners are at work again.

The **Atlas Mine**, owned by the **Pike County Coal Co.**, Petersburg, has resumed operations, giving employment to 400 men. The **Atlas mine** is the biggest mine south of the B. & O.

The **Higgins Martin Coal Co.** at Terre Haute, has filed a certificate of preliminary dissolution with the secretary of state.

**Deputy State Mine Inspector George Stevely** has announced that an examination for mine and fire bosses and hoisting engineers will be held in the Wiley high school building, Terre Haute, Oct. 1. Stevely will conduct the examinations.

## IOWA

Coal fields, recently discovered at Farmington, have attracted the attention of several Illinois men who have been preparing to enter this particular Iowa field. They have purchased the mining equipment from a defunct mine at Cuba, Ill. The men are **William Street**, **James Street** and **Ora Burbridge**, all of Peoria, Ill., and **Orin** and **Charles Pitcher**, all of Hanna City, Ill.

The **Capitol City Coal Co.** of Pella has struck a 6-foot vein west of this town. The coal is of excellent quality. A switch will be laid to the Rock Island tracks and the mine will be developed on a large scale.

## KENTUCKY

The **Suddy Coal Co.** has filed amended articles increasing its capital stock from \$150,000 to \$200,000.

**W. D. Faulkner**, field representative of the **Harlan Coal Co.**, jobbers of Louisville, has moved into new quarters in the Post Office Building, Harlan.

The **Sunlight Mining Co.**, of Sunlight, has incorporated with a capital of \$300,000. **T. W. Crow**, Nashville, Tenn., and **J. B. Ramsey** and **J. B. Boddie**, Madisonville, being the incorporators. This organization for a year or more has been developing a coal stripping operation near Madisonville, which represents one of the few and by far the largest project of its kind in the state.

Notice has been filed of the dissolution of the **Harlan Coal Mining Co.**, Louisville, which sold its mining operations in Harlan County, at Coxton and Kayu, to the Koppers interests of Pittsburgh last year. The same interests operate the **Harlan Coal Co.**, which is a separate and distinct concern, and which handles a jobbing business. Both companies were formed by **K. U. Meguire**.

The production of coal in Kentucky for the first six months of 1921, as compared with the corresponding period last year, shows a decrease of 5,663,150 tons, or 29.23 per cent. according to the official report of the chief inspector of mines. The proportionate decrease in working time was much greater, indicating higher labor efficiency. Eight coal mining districts are covered in the report and all of them show a diminished output.

According to reports from Whitesburg, there is a noticeable improvement in the Elkhorn and Hazard fields. Several mines that have been practically at a standstill for several months, have resumed full-time. Among these are cited the **Elkhorn Collieries Co.** at Thornton Creek, the **Apex Coal Co.**, the **Ame By-Products Co.**, the **Logan-Elkhorn Coal Co.**, at Whitaker and Parsons.

**James Henderson**, secretary of the **Crech Coal Co.** of Twilla, has left for a visit to his old home in Scotland. His father recently died there and part of Mr. Henderson's visit will be spent in the duty of settling up his estate.

At Louisville, the new retail coal handling plant of the **R. C. Tway Coal Co.** was placed in operation recently. This is said to be one of the fastest operating retail plants in the section. Link conveyors are used.

The **Walkers Branch Mining Co.**, of Bristol, Va., has filed suit in the Federal Court, at Covington, asking for a receiver for the

**Walkers Branch Fuel Co.**, of Hazard, and seeking to recover \$100,000 and interest, alleged due on notes, the suit involving title to three tracts of coal land in Perry County near Hazard. Judge **A. M. J. Cochran** granted the request for a receiver, and named **C. E. Bullard**.

## MICHIGAN

**W. L. Hessey** and **W. H. Hyre**, formerly of the general office of the **Hooper-Mankin Fuel Co.**, at Huntington, have been placed in charge of a newly established district office at **Battle Creek, Mich.**

Detroit's common council has approved the purchase of 15,000 tons of nut, pea and slack bituminous for use of the city waterworks from **Charles F. Sweeney**, Detroit wholesaler, at a price of \$5.04½ delivered in the pumping station bins. The coal comes from West Virginia and will cost \$1.55 a ton at the mines. With 15,000 tons previously purchased, this completes the supply for the waterworks for the coming winter.

## MINNESOTA

**H. S. Harmon**, of the Pittsburgh office of the **Carnegie Dock and Fuel Co.**, visited Duluth recently on a tour of inspection of the company's docks. The new scales of the company, at Duluth, went into service early in September. The scales have a capacity to weigh up to 300 tons.

**W. H. Forbes**, treasurer of the **Northwestern Fuel Co.**, of St. Paul has passed his vacation by an automobile trip along the north shore of Lake Superior. He inspected the company's docks at Duluth while in the city.

## NEW YORK

**T. H. Watkins**, president of the **Pennsylvania Coal & Coke Corporation**, will be one of the speakers at the **American Mining Congress** convention at Chicago, Oct. 17 to 22.

The **United States District Court** for the Southern District of New York has granted the **Lehigh Valley R. R. Co.** another extension, to Sept. 24, in which to file its segregation plan in accordance with the decree of the **United States Supreme Court**.

## OHIO

Word has been received at the Sub-District Miners headquarters that **Mine Rescue car No. 5**, from Washington, D. C., will be brought to **Bellaire** in October for exhibition. It is expected that the car will be kept in **Bellaire** about a week in order that all miners in the district may have an opportunity to see the exhibit. A movement may be started in **Bellaire** soon to get funds for the purpose of erecting a building on the north side of the Miners' temple for housing a **Mine Rescue Station**.

The breach of contract suit of the **Wigarb Mining Co.**, a West Virginia corporation, against the **Tildesley Coal Co.**, of Cincinnati, was dismissed in the **United States District Court** in Cincinnati by Judge **J. E. Sater**, upon application of the plaintiff. It was stated that this was without prejudice and that the costs were assessed the defendant.

**John Stirnkorb**, sales manager for the **Reliance Coal Co.**, Cincinnati, has returned from a two weeks' vacation. **Captain John Hatfield**, president of the company, is in Canada.

The **Automatic Reclosing Circuit Breaker Co.** of Columbus, announces that it has engaged the services of **Ralph R. Rugheimer**, who will be responsible for its activities in the coal fields of eastern Kentucky, Virginia and southeastern Ohio.

The **Eleon Engineering Co.** is the name of a new concern which has opened offices in Columbus, with **E. S. Hetrick** as president and general manager. The company is doing a general contracting and engineering business, specializing in elevating and conveying equipment for handling commodities, especially coal.

## PENNSYLVANIA

The **Silver Lake Coal Co.** has notified the Secretary of the Commonwealth that its capital stock has been increased from \$5,500 to \$300,000. Twenty-three deeds have been placed on record in **Schuylkill County** in a transaction which conveyed to the **Silver Lake Company** 3,328 acres in **Barry** and **Foster townships**. A mortgage of \$200,000 was placed on record at the same time.

The **Big Four Coal Mining Co.** has been formed with a capital of \$200,000 to operate properties in the anthracite field. **Michael J. Kelly**, **Curwensville**, is treasurer.

The **Troy Hill Coal Co.** is being organized by **John P. Ruffner** and **John R. Fulton** to operate coal properties in the western part of the state. The company is represented by **Horace F. Baker**, 1711 Oliver Building, Pittsburgh.

The **Maple Grove Coal Co.** has been incorporated under state laws to operate properties in the **Johnstown** section, with capital of \$160,000. **H. R. Miller**, **Johnstown**, is treasurer.

**C. O. Norris** and **H. J. Thompson**, who constitute the **Cassidy Coal Co.**, of **Curwensville**, Clearfield County, have closed a deal whereby they became the owners of the **Samuel Smeal** farm in **Pike township**. It is said it will require twelve years to remove the coal from the new tract. The **Cassidy** mines have been operating six days a week and the operators expect to continue at a largely increased output.

The **Albany Coal Co.**, a small operation on the **Monongahela River**, near **Brownsville**, which has in the past worked union right on the edge of the non-union coke region field, has started up, open-shop, on a reduced wage scale.

The **American Coke Corporation**, which has been working steadily shipping coal at three plants at **Orient**, **Martin** and **Linn**, is now down to one or two days a week at all three.

A charter has been issued to the **Fair-lamb Co.**, of **Philadelphia**, to deal in coal, coke, sand, lime and cement. Capital stock is \$125,000 and the treasurer is **John F. T. Lewis**, of **Broomall**. The other incorporators are **George D. Van Sciver** and **J. B. Van Sciver**, **Philadelphia**.

**A. F. Strouse**, formerly of the **Industrial Engineering Co.** and recently with the **H. C. Frick Coke Co.**, has established offices in **Pittsburgh**, for the practice of industrial engineering, specializing in power costs, economics, purchased power problems and electrification of industrial plants.

**Clay F. Lynch**, of **Greensburg, Pa.**, general superintendent of the **H. C. Frick Coke Co.**, has been named president of the **Union Trust Co.** of **Greensburg** which expects to open its doors for business about Oct. 15.

Chief of Mines, **Seward E. Button**, of the **Department of Mines**, **Pennsylvania**, acting upon the complaint of the **Pennsylvania Coal Co.**, **Dunmore**, that the mining methods of the **Suffolk Coal Co.**, whose property adjoins that of the complainant, will result in letting water and quicksand into the workings of the **Pennsylvania** company, has appointed a commission to investigate and make a report, composed of **Inspectors Augustus McDade**, 7th District, in which the two companies are located; **Frank Kittle**, 13th District, and **Joseph Walsh**, 14th District.

## TENNESSEE

The **Etna Coal Co.** has been acquired by new interests, headed by **R. F. Riddle & Sons**, **Chattanooga**. The new owners are planning for the development of the company's holdings and are said to be considering the installation of new machinery.

The **Kentucky Fuel Co.** of **Cincinnati** has opened an office in **Knoxville** with **T. J. Gilbert**, former secretary and treasurer of the **Furnace Gap Coal Mining Co.** of **Manchester, Ky.**, in charge.

The **Staub Coal Co.**, **Tracy City**, has acquired property in the vicinity of **Daisy**, and plans for the establishment of a new plant with initial daily capacity of about 500 tons. A list of equipment for installation is being arranged.

## UTAH

The **Mutual Coal Co.** has ordered its third **Sullivan** undercutting machine as well as **Sullivan** drill equipment for sinking a new shaft at the company's coal mines near **Rains**.

Construction of special coaling barges and a mammoth storage dock at **Alameda, Cal.** in **San Francisco Bay**, at a cost of \$700,000 will make possible the use of more **Utah** coal for trans-Pacific liners and coastwise vessels, according to **Frederick A. Sweet**, president of the **Standard Coal Co.**, recently returned from the coast.

The **Great Western Coal Mines** recently filed a plat of their new town of **Great Western**. The new company has opened offices at **Helper**.

## VIRGINIA

As result of the pronounced falling off of business, coal offices in **Norfolk** are cutting down their forces very noticeably, and in some instances are preparing to close. The **Kentonia Coal Co.'s** office, which has been in charge of **E. M. Robinson**, closed Sept. 1, and its business was removed to the **Bluefield, W. Va.**, branch.

Ancillary receivers have been appointed for the Interstate Coal & Dock Co.'s holdings at Norfolk, as result of the suit instituted in New York under the title: **Lurhig Collieries Co., et al vs. Interstate Coal & Dock Co.**, it being alleged the latter owed \$800,000 in unpaid bills to the plaintiffs. Ellis McClellan Preston and John B. Johnston are the receivers named, with a restraining order to accompany them giving them full and uninterrupted authority in disposing of the assets of the company.

### WEST VIRGINIA

The office of general manager of the Ekthorn Piney Coal Mining Co., made vacant by the resignation of Garland Fletcher, will not be filled until late in the fall. Meanwhile, **E. R. Phillips**, of Huntington, W. Va. will remain in the Huntington office nominally in charge. Most of the mines of this company are not shipping coal at present.

In connection with the driving of a new entry at its plant at Balir in the Coal River field, the **Holdred Collieries Co.** is engaged in building a new tippie which will be equipped with shaker screens, picking tables and all other equipment for getting out prepared sizes. This company is under the management of **D. O. Wing**.

In the Cabin Creek region, the **Wyatt Coal Co.**, with general offices at Charleston, is pushing work on a new tippie at its Sharon mine and on a new tippie at its Wake Forest mine.

The capital stock of the **Hartland Colliery Co.**, of which **John B. Hart**, of Charleston, is president, has increased its capital stock from \$500,000 to \$2,000,000. This issue is to be divided into 10,000 shares of common and 10,000 shares of preferred stock, having a par value of \$100 per share.

**V. B. Hayes**, of the sales force of the Jamison Coal & Coke Co., Pittsburgh, spent a few days in the Fairmont field during the early part of September.

**W. C. Posten** of the Greenmar Coal Co., of Elkins, was absent from his office for a few days during the early part of September on a hunting trip.

It has been announced by the Consolidation Coal Co. that **J. O. Brooks** is appointed superintendent of Mine No. 25 at Pinnickinnick. He had been acting as superintendent of Mine 21 at Gypsy. **B. G. Ash**, superintendent of Mine 25 has been transferred to Mine 21.

**T. H. Johnson**, of Bellaire, Ohio, who heads the Chesapeake Coal Co., was a recent business visitor in the Fairmont field.

A Jeffrey conveyor, capable of handling 2,400 tons a day, has been installed by the **Delmar Coal Co.** at its Ruth mine not far from Hilderbrand, and is rated as probably the largest conveyor of its kind in the region. Much better time was made in installing the conveyor than had generally been anticipated.

The **West Virginia and Kentucky By-Products Coal Co.**, of Huntington, has been organized with a view to operating in both Kentucky and West Virginia. Those principally interested in the new concern however are: **R. L. Vaught**, **Dr. G. L. Howard**, **J. W. Van Valkenburgh**, **Frank Hess**, all of Huntington, and **L. J. Kidd** of Richmond, Va.

The general office building and company store building of the **Empire Fuel Co.** at Huston, between Cedar Grove and Montgomery, in the Kanawha field, were destroyed by fire recently. It is believed that the fire was of incendiary origin. The mine had been operating on a non-union basis for the last year, about 200 men being employed.

**Louis T. Krebs**, manager **W. A. Marshall & Co.**, Morgantown, has returned to the New York office after a vacation and business trip in Montreal and Quebec. He reports that conditions in the Dominion are a little more brisk than they were a month ago.

Mr. Krebs will assume the duties of the Fairmont office as well as the Morgantown office.

**J. E. Jones** has been appointed superintendent of the Shamrock Fuel Co., succeeding **Charles Upchurch**.

**J. J. McSweeney**, of Baltimore, who is the vice-president of the New England Fuel & Transportation Co., spent a few days recently in the Fairmont region on a visit to the properties of the New England company.

A coal charter has been granted to the **Mary Elizabeth Coal Co.** of Huntington; \$500,000. **H. H. Morris**, **John H. Holt**, **W. K. Cowden**, **C. S. Williams**, **Homer E. Holt**, Huntington, incorporators.

### BRITISH COLUMBIA

The Harewood Mine of the **Western Fuel Corporation of Canada**, Nanaimo, has been reopened. The company is reported to have secured contracts that necessitate an increased output. Consequently, not only the Harewood, but the **Wakesiah**, **Reserve**, and **No. 1** mines must be worked to their capacity.

Six of the latest type of **Paul Breathing Apparatus** have been purchased by the British Columbia Department of Mines for the **Cumberland (V. 1.) Mine Rescue Station**. This is one of the coal mine centers of the **Canadian Collieries (D), Ltd.**

### NOVA SCOTIA

**Westgarth F. Brown**, chief mineral inspector of woods and forests in Great Britain, is inspecting the **Nova Scotia** mines of the **British Empire Steel Corp.** in the capacity of an expert on submarine mining. He will probably also examine the iron ore mines at **Wavana**, **Newfoundland**, and will consult with the mining staff of the corporation as to submarine mining practice in **Cape Breton**.

### Traffic News

On Sept. 26 the **Illinois Central** will publish a new tariff on coal from western Kentucky mines on its road to points on a number of lines in **Central Freight Association** territory. Connecting lines which will be affected include the **B. & O.**, **Big Four**, **Wabash**, **Grand Trunk**, **Michigan Central**, **New York Central**, **Pennsylvania**, **Pan-Handle** and **Toledo**, **St. Louis & Western**. This will open a large territory.

Press reports are to the effect that the **Henry Ford** interests, operating the **D. T. & I. R.R.**, **Ford** motor interests, and mines in Kentucky, are planning terminal facilities at **Ashland, Ky.**, with a bridge across the **Ohio River** at that point, with the idea of eventually extending a line down into the coal fields of the state. This is an old plan which has been commented on at some length. However, it is reported in the latest dispatches that official announcement has been made concerning the plans for securing necessary terminal sites.

Three important rate cases as they relate to the transportation of coal in the **Buckeye State** were recently scheduled to start at **Columbus**. The first to be taken up is what is known as the "**Ohio Case**," which is the echo of a decision of the **Ohio Utilities Commission** last January in which the railroads were prohibited from making their full advances as per tariffs filed. In these tariffs carriers sought to make the **Inner Crescent** the base by allowing the 40 per cent increase and by maintaining the old differential give **Ohio** mines an advance of 50 and more per cent and the outer crescent about 36 per cent. The next scheduled is the **Henry Ford** case of the **D. T. & I.** where he seeks to make a reduction of 20 per cent on all coal freight rates. This is challenged by other carriers. The third case is that of the **Southern Ohio Coal Exchange** in which the differential between **Ohio** districts as compared with the **Inner and Outer Crescents** is challenged.

**Officials of the Chesapeake & Ohio, Big Four and Baltimore & Ohio** railroads have been inspecting branch lines in the **Louisville** district.

The **Denver & Rio Grande Western R.R.** has purchased 700 new **Western Pacific** coal cars for use in **Utah** and will take 1,000 more later.

The **New York, New Haven & Hartford** proposes an increase in the rate on both

soft and hard coal from **Springfield to Armory, Mass.**, from 42c. to 80c. per gross ton.

The **Utah Fuel Co.** is seeking to recover \$48,000, alleged excessive charges when the **U. S. Government** was in control of the **D. & R. G.**. The increase is said to have amounted to \$7 a car. The case is being heard by **H. C. Keene**, examiner for the **Interstate Commerce Commission**.

Preliminary surveys have been completed by the **Louisville & Nashville R.R.** on a proposed extension from **Bettyville**, **Lee County, Ky.**, across sections of **Lee County** and through **Clay** and **Bell counties** to **Loyal**, **Harlan County**. If the construction of this route is held feasible, work will begin at once.

In the complaint of the **Duquesne Coal & Coke Co.**, the commission holds that interstate rates on bituminous coal from mines west of **Pittsburgh** in **Pennsylvania** and **West Virginia** on the **Pittsburgh and West Virginia Ry.** to points north and east are unduly prejudicial.

In the complaint of the **Michigan Builders Supply Co.**, the **I. C. C.** decides that rates from **June 25 to Nov. 12, 1918**, on anthracite coal from **Carbondale**, **Jessup**, **Scranton** and **Winton, Pa.**, to **Detroit** were unreasonable because they exceeded \$3.70 a ton.

In the complaint of the **Endicott-Johnson Corporation**, an **I. C. C.** examiner recommends that the rate on bituminous coal from **Morris Run, Pa.**, to **Endicott** and **Johnson City, N. Y.**, was not unreasonable.

The complaint of the **Wayne Coal Co.** has been assigned for hearing before an examiner at **Pittsburgh**, **Sept. 30**.

The **Northwestern Traffic and Service Bureau of Minneapolis** complains to the **I. C. C.** against unreasonable rates on hard and soft coal from various mines in the **United States** to destinations in the **Northwest** states by reason of the increase under **General Order No. 28**.

### Obituary

**William Baxter Myers**, treasurer of the **Bethlehem Fabricators, Inc.**, died recently in **Bethlehem, Pa.**

**William H. Buchrig**, formerly a well-known coal operator and also banker of **Minier, Ill.**, died recently at his home in that city.

**Ray Hickerson**, coal mine operator of **Rushville, Ill.**, lost his life recently in an attempt to rescue his ten year old son who had fallen into an abandoned mine shaft.

when black damp immediately overcame him.

**John S. Field**, chairman of the board of directors of the **Consumers Co.**, died recently at his home in **Chicago**, at the age of 74 years. He was a director of several subsidiary lines of the **New York Central** and was active in church and charitable work.

**Edmund L. Penruddocke**, age 52, a well-known mechanical draftsman, died recently at his residence in **Birmingham**. Mr. Penruddocke was connected with the **Tennessee Coal, Iron & Railroad Co.** at the time of his death, and had previously been in the employ of the **Sloss-Sheffield Steel & Iron Co.** for a number of years.

**Michael White**, general superintendent of the **Springfield District Coal Mining Co.**, died recently at his home in **Springfield, Ill.** He was also for five years superintendent for the **Peabody Coal Co.**, at **Sherman**, and was well known in mining circles.

### Coming Meetings

The annual **Institute Meeting of the Alabama Coal Operators' Association** is scheduled to be held at the **Empire Mines** of the **Empire Coal Co.**, at **Empire**, **Walker County**, **Oct. 4**. This is the first meeting to be held by the **Institute** in several years, the sessions having been dispensed with during the war.

The **American Mining Congress and National Exposition of Mines and Mining Equipment**. The twenty-fourth annual convention on **Oct. 17 to 22** at the **Coliseum**, **Chicago, Ill.** Assistant secretary, **John T. Burns**, **Congress Hotel**, **Chicago, Ill.**

**American Manufacturers Export Association** will hold its twelfth annual convention at the **Waldorf-Astoria**, **New York City**, **Oct. 5 and 6**. Secretary **A. W. Willmann**, **160 Broadway**, **New York City**.

**National Safety Council** will hold its annual congress at the **State House**, **Boston, Mass.**, **Sept. 26 to Sept. 30** inclusive. Secretary, **S. J. Williams**, **Chicago, Ill.**

The **Coal Mining Institute of America** will hold its annual meeting at **Pittsburgh, Pa.**, **Dec. 7, 8, and 9**. Secretary **H. D. Mason, Jr.**, **Chamber of Commerce Bldg.**, **Pittsburgh, Pa.**

An **Industrial Relations Conference** for all industries in the **State of Pennsylvania** has been arranged for **Oct. 24 to 27** at **Harrisburg, Pa.**, by the **Commissioner of Labor and Industry**, **C. E. Connolly**.

The sixth annual convention of the **National Association of Purchasing Agents** will be held **Oct. 10-13** at **Indianapolis, Ind.**